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THE TICKS OF VENEZUELA (ACARINA: IXODOIDEA) WITH A KEY TO THE SPECIES OF AMBLYOMMA IN THE WESTERN HEMISPHERE

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by

Eleanor K. Jones,[1] Carleton M. Clifford,[1] James E. Keirans,[1] and Glen M. Kohls[1]

ABSTRACT

Forty-nine species in 2 families and 10 genera are recorded for Venezuela. A key to the species of *Amblyomma* in the Western Hemisphere is given. Host and locality records are provided for each species. No new species are reported but the following 17 species are new for the fauna of Venezuela: *Antricola silvai* Cerný, 1967, *Ornithodoros boliviensis* Kohls and Clifford, 1964, *O. brodyi* Matheson, 1935, *O. puertoricensis* Fox, 1947, *O. rossi* Kohls, Sonenshine and Clifford, 1965, *O. stageri* Cooley and Kohls, 1941, *O. yumatensis* Cooley and Kohls, 1941, *O. marinkellei* Kohls and Clifford, 1969, *O. viguerasi* Cooley and Kohls, 1941, *Amblyomma extraoculatum* Neumann, 1899, *A. incisum* Neumann, 1906, *A. naponense* (Packard, 1869), *A. oblongoguttatum* Koch, 1844, *A. pacae* Aragão, 1911, *A. scalpturatum* Neumann, 1906, *A. tigrinum* Koch, 1844, *Ixodes auritulus* group.

INTRODUCTION

Ticks are vectors and reservoirs for a wide variety of organisms that are infective for wild and domestic vertebrate animals. Many of these pathogens are transmitted to humans when the ticks bite.

In addition to the transmission of pathogens, ticks can also cause toxemia, paralysis, anemia, and severe irritation to man and animals.

The first step in assessing the potential of ticks to cause problems for man and domestic animals is an accurate survey of the species that occur in a given region. This study is intended to provide background information on host-ectoparasite relations for any future epidemiological studies that may be undertaken in Venezuela.

Detailed information on ticks occurring in Venezuela is not currently available, although a number of workers have contributed to the knowledge of ticks in this region (Neumann, 1899, 1901, 1906, 1911; Nuttall, et al., 1908; Brumpt, 1921; Robinson, 1926; Pinto, 1930; Vogelsang, 1936; Aragão, 1936; Vogelsang and Cordero, 1940; Matheson, 1941; Vogelsang and Santos Dias, 1953*a* and *b*; and Diaz-Ungria, 1957). Among these papers the work of Vogelsang and Santos Dias (*loc. cit.*) furnish the only comprehensive study of the ticks in this country. They recorded thirty species in two families and nine genera.

COLLECTING LOCALITIES

The present work is based on extensive collections made during a three-year period (1965-1968) at 82 major collecting localities (Map 1, Table 1) in all parts of Venezuela. This project was part of a larger study entitled *Ecology and Distribution of Mammalian Ectoparasites and Their Hosts in Venezuela* and was supported by the U.S. Army Medical Research and Development Command, Washington, D.C. (Contract No. DA-49-193-MD-2788), under the direction of Drs. Vernon J. Tipton and Charles O. Handley, Jr. About 40,000 mammals were examined

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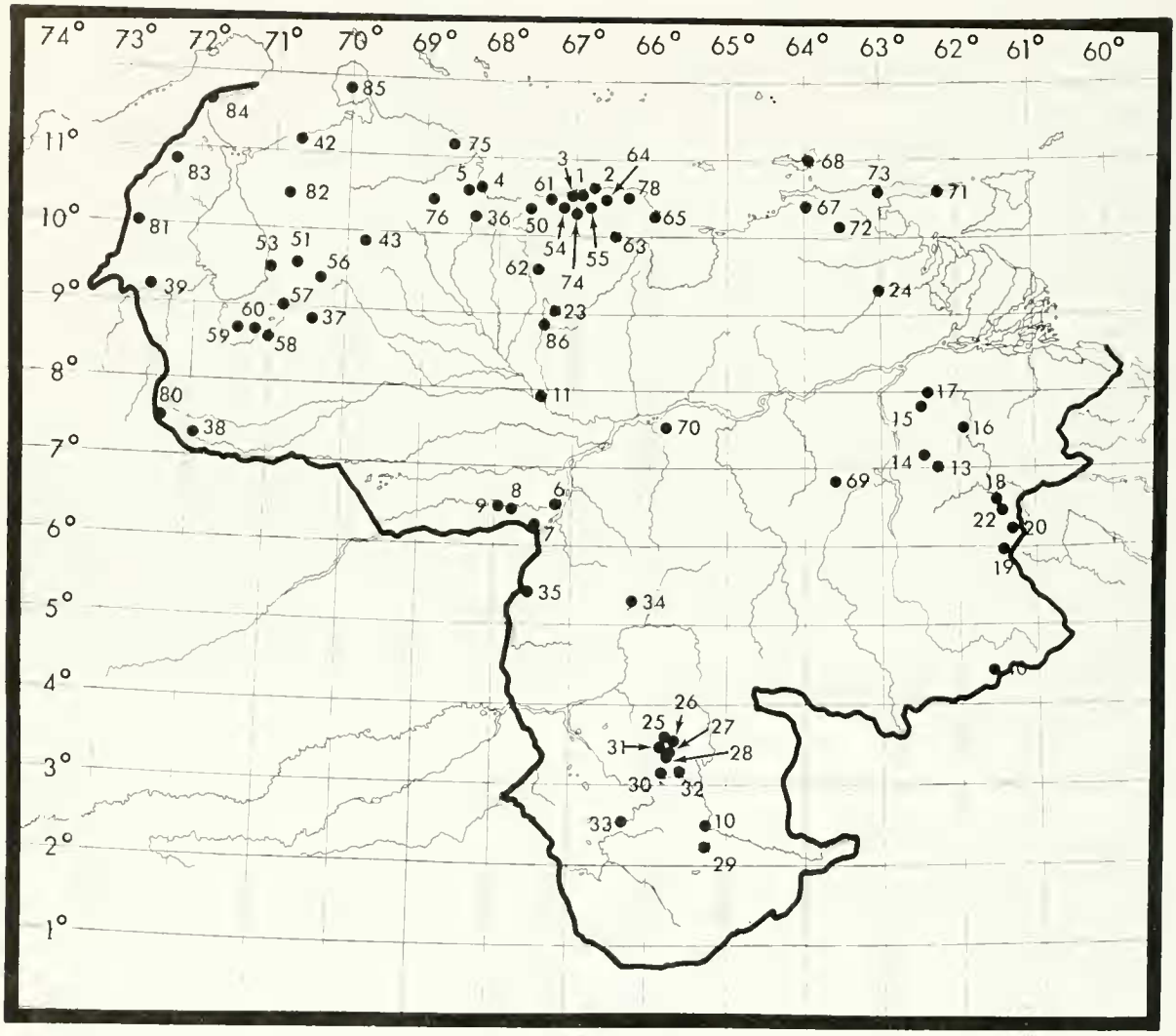

Fig. 1. Map of Venezuela showing major collecting localities.

from which over 25,000 vials of ectoparasites were collected. Among these collections was a tremendous volume of ticks which has furnished the basis for this work.

A total of 49 species in 2 families and 10 genera occur in Venezuela. This includes 17 species which are here recorded for the first time.

Table 1. Collecting localities Figured on Map, Fig. 1.

01 Dto. Federal—Los Venados, 4 km NNW Caracas
02 Dto. Federal, Miranda—Pico Ávila (=Hotel Humboldt), 5 km NNE and 6 km NNW Caracas
03 Dto. Federal—Lower Boca Tigre Valley, 5 km NW Caracas
04 Falcón—Boca de Yaracuy, 28 km WNW Pto. Cabello
05 Falcón, Yaracuy, Carabobo—2.5 to 24 km NW, N, and NE Urama
06 Apure—Hato Cariben, Río Cinaruco, 32 to 46 km NE Pto. Paez
07 Apure—Pto. Paez to Río Cinaruco, 38 km NNW Pto. Paez
08 Apure—Río Cinaruco, 48 km NW Pto. Paez
09 Apure—Río Cinaruco, 65 km NW Pto. Paez
10 Amazonas—Boca Mavaca, 84 km SSE Esmeralda
11 Apure—San Fernando de Apure
13 Bolívar—Río Supamo, 50 km SE El Manteco
14 Bolívar—Los Patos, 25 km SE El Manteco
15 Bolívar—25 km S Upata
16 Bolívar—5 km NNW Guasipati
17 Bolívar—5 km S Upata
18 Bolívar—Río Cuyuni, 15 km SE El Dorado
19 Bolívar—Km 125, 85 km SSE El Dorado

20 Bolívar—Km 74 (=El Manaco), 59 km SE El Dorado
21 Bolívar—Km 67 (same as sublocality 20-07)
22 Bolívar—Km 33, 28 km SE El Dorado
23 Guárico—Hato Los Leones, Caño Agua Fría, 23 km NE Calabozo
24 Monagas—Hato Mata de Bejuco and vicinity, 55 km SE Maturín
25 Amazonas—Belén, Río Cunucunuma, 56 km NNW Esmeralda
26 Amazonas—Cerro Duida, Caño Culebra, 50 km NNW Esmeralda, 6 km SE Belén
27 Amazonas—Cerro Duida, Cabecera del Caño Culebra, 40 km NNW Esmeralda
28 Amazonas—Cerro Duida, Cabecera del Caño Negro, 32 km NW Esmeralda
29 Amazonas—Río Mavaca, 108 km SSE Esmeralda
30 Amazonas—Tamatama, 2 km up Río Orinoco from mouth of Caño Casiquiare
31 Amazonas—Acanana, Río Cunucunuma
32 Amazonas—Esmeralda, Río Orinoco
33 Amazonas—Capibara, Caño Casiquiare
34 Amazonas—San Juan, Río Manapiare
35 Amazonas—Pto. Ayacucho to 65 km SSW Pto. Ayacucho
36 Carabobo—Montalbán
37 Barinas—Altamira
38 Apure—Nulita, 3 km N San Camilo (= El Nula), Selvas de San Camilo
39 Zulia—El Rosario, 39 to 65 km WNW Encontrados
40 Bolívar—Icabarú to 56 km NE Icabarú
41 Monagas—Hato Mata de Bejuco and vicinity (same as locality 24)
42 Falcón—Capatárida
43 Lara—Caserio Boro, 10 to 40 km N and NE El Tocuyo
44 Carabobo—Montalbán (same as locality 36)
50 Aragua—Rancho Grande Biological Station, 12 km N Maracay
51 Trujillo—various localities 10 to 30 km N, NW and WNW Valera
53 Trujillo—Hda. Valle Verde, 46 to 54 km WNW Valera
54 Dto. Federal—Alto Não León, 29 km SW Caracas, near Petaguire
55 Miranda—11 to 24 km SE Caracas
56 Trujillo—Hda. Misisí, 14 km E Trujillo
57 Mérida—Paramito, 3 km W Timotes
58 Mérida—Near Tabay, 13 km NE and E Mérida
59 Mérida—La Carbonera, 24 km W Mérida
60 Mérida—Santa Rosa, 1 km N Mérida
61 Dto. Federal—Hda. Carapiche, near El Limón, 46 km W Caracas
62 Guárico—Hato Las Palmitas, 35 km SSW San Juan de los Morros
63 Guárico, Miranda—10 to 21 km NE, N, and NW Altagracia, near Guatopo Park
64 Miranda—Curupao, 30 km E Caracas
65 Miranda—Río Chico
66 Amazonas—Esmeralda (same as locality 32)
67 Sucre—2 to 24 km E Cumaná
68 Nueva Esparta—Isla Margarita
69 Bolívar—Hato San José, 125 to 150 km S Ciudad Bolívar
70 Bolívar—Hato La Florida, 45 km ESE Caicara
71 Sucre—Ensenada Cauranta, 7 to 12 km NE Güiria
72 Monagas, Sucre—San Agustín, 2 to 8 km NW Caripe
73 Sucre—Manacal, 26 km ESE Carúpano
74 Miranda—IVIC, 15 km SW Caracas
75 Falcón—Near Mirimire
76 Yaracuy—Minas de Aroa, 20 km NW San Felipe
77 Miranda—12 to 24 km SE Caracas (same as locality 55)
78 Miranda—Caves near Virongo, 69 km E Caracas
80 Táchira—Buena Vista, 40 km SW San Cristóbal
81 Zulia—Kasmera, 20 km WSW Machiques
82 Falcón—Cerro Socopo, 92 km ESE Maracaibo
83 Zulia—Near Cerro Azul, 72 km WNW Maracaibo
84 Zulia—Near Cojoro, 111 km NNW Maracaibo
85 Falcón—Peninsula de Paraguaná, 57 km NW Coro
86 Guárico—Biological Station, 11 km SSE Calabozo

SPECIES IN THE SMITHSONIAN VENEZUELAN COLLECTION

Family Argasidae

Four genera of Argasidae are reported from Venezuela. Two of these, *Argas* and *Otobius*, are based only on literature references as indicated below.

A key to adults and nymphs of the genera and most of the species of Argasidae in Venezuela is given by Cooley and Kohls, 1944.

Genus *Antricola* Cooley and Kohls, 1942

Only one species of this genus is found in Venezuela.

Antricola (*Antricola*) *silvai* Cěrný, 1967

Antricola silvai Cěrný, 1967:141.

MATERIAL EXAMINED

FALCON: 20+ LL from 5 *Pteronotus davyi*, 58 km N, 34 km W Coro, Cueva del Guano, 120 m elev., 10-23.VII.68, N. E. Peterson, J. Matson; 2LL from 2 *Mormoops megalophylla* 58 km N, 34 km W Coro, Cueva del Guano, 120 m elev., 22-23.VII.68, N. E. Peterson, J. Matson; 5 LL from *Pteronotus davyi*, 49 km N, 34 km W Coro, Moruy, 55 m elev., 11.VII.68, N. E. Peterson, J. Matson.

SUCRE: 2 ♂♂, 3 ♀♀, 11 NN, 153 LL from 14 *Mormoops megalophylla*, 9 km N, 4 km E Guiria nr. Río Salado, 90 m elev., 3-7.VI.67, N. E. Peterson, et al.; 2♀♀ from 1 *Mormoops megalophylla*, 10 km N and 5 km E Güiria, El Mango, 90 m elev., 7.VI.67, N. E. Peterson, et al.; 84 LL from 6 *Mormoops megalophylla*, 7 km N, 5 km E Güiria, Ensenada Cauranta, 1 m elev., 3-14.VI.67, N. E. Peterson, et al.

YARACUY: 11 LL from 1 *Pteronotus psilotis*, 19 km NW Urama, 25 m elev., 8.III.66, A. L. and M. D. Tuttle.

Antricola sp. probably *silvai*

MATERIAL EXAMINED

FALCON: 3 NN were found on *Leptonycteris curasoae* and *Pteronotus davyi*.

DISTRIBUTION AND HOSTS

Adults and nymphs of *Antricola silvai* are usually found in caves (Cěrný, 1969). However, 2 females were taken from *Mormoops megalophylla* in the present study. Larvae have been found on a variety of bat species.

This is the first record of *A. silvai* from Venezuela. It was previously known only from Cuba and Curacao (Kohls, 1969).

Genus *Argas* Latreille, 1795

Argas (*Persicargas*) *miniatus* Koch, 1844.

Argas miniatus Koch 1844:219.

For information regarding the synonymy of this species see Kohls, et al. 1970.

DISTRIBUTION AND HOSTS

Information included here is based on recent treatment of *Argas miniatus* by Kohls, et al. (*loc. cit.*). Chickens are the only hosts reported for this species.

Vogelsang and Santos Dias (1953*b*) report *A. miniatus* from Venezuela and Kohls, et al. (*loc. cit.*), list Panama, Trinidad, Colombia, British Guiana, and Brazil.

Genus *Ornithodoros* Koch, 1844

Most ticks taken from animals are larvae, while adults and nymphs are more often collected from resting places of the hosts rather than on the host itself. A key to the larvae of the genus *Ornithodoros* is given by Jones and Clifford (1972).

Ornithodoros (*Alectorobius*) *azteci* Matheson, 1935

Ornithodorus azteci Matheson, 1935:349.

Ornithorodos anduzei Matheson, 1941.

MATERIAL EXAMINED

APURE: 2 LL from 2 *Macrophyllum macrophyllum*, 46 km NE Pto. Paez, Hato Cariben, Río Cinaruco, 76 m elev., 6,28.XII.65, A. L. and M. D. Tuttle; 1 L from *Carollia perspicillata* as above, 24.XII.65, A. L. and M. D. Tuttle.

BOLÍVAR: 1 L from *Peropteryx macrotis*, 85 km SSE El Dorado, km 125, 374 m elev., 29.V.66, A. L. and M. D. Tuttle.

CARABOBO: 1 L from *Carollia perspicillata*, 5-6 km E, NE Urama, 25 m elev., 6.III.66, N. E. Peterson; 1 L from *Lonchorhina aurita*, 3 km W Montalbán, La Leonera, 1393 m elev., 22.XI.67, A. L. Tuttle.

DTO. FEDERAL: 1 L from *Carollia perspicillata*, 3 km S, 46 km W Caracas, nr. El Limón, 380 m elev., 21.VIII.66, N. E. Peterson.

FALCÓN 1 L from *Peropteryx kappleri*, 3 km N, 5 km E Mirimire, nr. La Cumbre, 260 m elev., 16.XI.67, N. E. Peterson, et al.; 2 LL from 1 *Glossophaga longirostris*, 19 km N, 4 km E Mirimire nr. Aquide, 5 m elev., 13.XI.67, N. E. Peterson, et al.; 3 LL from 1 *Artibeus jamaicensis*, 5 km S, 9 km E Mirimire, nr. San Paito, 270 m elev., 17.XI.67, N. E. Peterson, et al.

MIRANDA: 3 LL from 1 *Peropteryx macrotis*, 15 km SE Caracas, nr. El Encantado, 730 m elev., 9.I.66, N. E. Peterson; 2 LL from 1 *Zygodontomys brevicauda*, 6 km S Río Chico, 17.XI.66.

SUCRE: 6 LL from 2 *Glossophaga soricina*, 8 km N, 5 km E Güiria, Hda. La Concordia, 7 m elev., 15-16.VI.67, N. E. Peterson, et al.; 1 L from *Phyllostomus hastatus*, 9 km N, 4 km E Güiria, nr. Rio Salado, 90 m elev., 7.VI.67, N. E. Peterson, et al.

T. F. AMAZONAS: 1 L from *Carollia perspicillata*, 25 km SSE Puerto Ayacucho, Paría, 114 m elev., 17.IX.67, A. L. Tuttle, et al.

TRUJILLO: 59 LL from 18 *Carollia perspicillata*, 23 km NW Valera, nr. Agua Santa, 90 m elev., 28.VIII and 7-18.X.65., N. E. Peterson; 12 LL from 2 *Desmodus rotundus*, as above except 7.IX.65 and 16.X.65, N. E. Peterson; 45 LL from 5 *Carollia perspicillata*, 5,14.IX.65, 18 km N Valera, nr. Agua Viva, 164 m elev., N. E. Peterson; 9 LL from 2 *Glossophaga soricina*, 23 km NW Valera nr. Agua Santa, 90 m elev., 23.VIII and 7.IX.65, N. E. Peterson; 5 LL from 2 *Carollia perspicillata*, 18 km N Valera, nr. Agua Viva, 164 m elev., 6.X.65, N. E. Peterson; 2 LL from 1 *Desmodus rotundus*, 18 km N Valera, nr. Agua Viva, 164 m elev., 7.X.68, N. E. Peterson; 6 LL from 4 *Trachops cirrhosus*, 23 km NW Valera, nr. Agua Santa 90 m elev., 8.X.65, N. E. Peterson; 4 LL from 3 *Carollia perspicillata*, 18 km N

Valera, nr. Agua Viva, 164 m elev., 3.IX.65, N. E. Peterson; 7 LL from 3 *Desmodus rotundus*, 23 km NW Valera, nr. Agua Santa, 90 m elev., 2.IX and 18-19.X.65, N. E. Peterson; 17 LL from 3 *Carollia perspicillata*, as above, 28.VIII and 22.X.65, N. E. Peterson; 1 L from *Lonchorhina aurita*, 18 km N Valera, nr. Agua Viva, 164 m elev., 3.IX.65, N. E. Peterson; 1 L from *Lonchorhina aurita*, 25 km N Valera, nr. Agua Santa, 90 m elev., 21.X.65, N. E. Peterson.

Yaracuy: 1 L from *Carollia perspicillata*, 19 km NW Urama, ? elev., 14.XI.65, A. L. and M. D. Tuttle; 1 L from *Glossophaga soricina*, as above, A. L. and M. D. Tuttle; 22+ LL from 1 *Carollia perspicillata*, 8 km W San Felipe, Minas de Aroa 400 m elev., 6.XII.67, N. E. Peterson, *et al.*

Yaracuy and Carabobo: 4 LL from 2 *Carollia perspicillata*, 19 km NW Urama, Km 40, 5-25 m elev., 20,25.X.65, A. L. and M. D. Tuttle.

Yaracuy and Falcón: 1 L from *Desmodus rotundus*, 35 km NW Pto. Cabello, Boca de Yaracuy, 2 m elev., 27.IX.65, A. L. and M. D. Tuttle.

Zulia: 1 L from *Carollia* sp., Kasmera, nr. Sierra de Perijá, 10 km S, 18 km W Machiques, 270 m elev., 22.IV.68, N. E. Peterson, J. Matson; 1 L from *Artibeus* sp. D, as above, 15.IV.68, N. E. Peterson, et al.; 1 L from *Lonchorhina aurita*, as above, 20.IV.68, N. E. Peterson, J. Matson; 3 LL from *Desmodus rotundus*, as above, N. E. Peterson, J. Matson.

Ornithodoros probably *azteci*

Material Examined

Bolivar: 2 LL from 1 *Peropteryx macrotis*, 85 km SSE El Dorado Km 125, 374 m elev., 29.V.66, A. L. and M. D. Tuttle.

Carabobo: 2 LL from 1 *Carollia perspicillata*, 5-6 km ENE Urama, 25 m elev., 6.III.66, A. L. and M. D. Tuttle.

Distribution and Hosts

All larvae were taken from a variety of bat hosts. A similar group of hosts is given for *O. azteci* in Panama by Fairchild, et. al. (1966) and for Venezuela by Vogelsang and Santos Dias (1953*a*).

This species was first reported from Venezuela by Matheson (1941) (as *O. anduzei*). It has also been reported from Cuba, Mexico, Colombia, Trinidad, Jamaica, and the Lesser Antilles (Kohls, 1969).

Ornithodoros (*Alectorobius*) *boliviensis* Kohls and Clifford, 1964

Ornithodoros boliviensis Kohls and Clifford, 1964:792.

Material Examined

Bolivar: 7 LL from 1 *Eptesicus brasiliensis*, 59 km SE El Dorado, Km 74, El Manaco, 150 m elev., 24.VI.66, A. L. and M. D. Tuttle.

Carabobo: 3 LL from 1 *Molossus ater*, Montalbán, 1091 m elev., 5.XI.67, A. L. Tuttle; 1 L from *Molossus bondae*, as above, A. L. Tuttle.

Monagas: 31+ LL from 2 *Molossus ater*, 3 km N, 4 km W Caripe, San Augustín, 1160 m elev., 7, 10.VII.67, N. E. Peterson, et al.

Sucre: 1 L from *Noctilio leporinus*, 21 km E Cumaná, Hda. Tunantal, 0 m elev., 10.XII.66, N. E. Peterson, et al.

T. F. Amazonas: 32 LL from 10 *Molossus ater*, nr. Tamanaco, NE San Juan, Río Manapiare, 155 m elev., 14-24.VII.67, M. D. Tuttle, F. L. Harder.

Ornithodoros probably *boliviensis*

Material Examined

Bolívar: 4 LL from 1 *Molossops planirostris*, 14 km S, 45 km E Caicara, Hato La Florida, 50 m elev., 19.IV.67, N. E. Peterson, et al.

Monagas: 24 LL from 1 *Molossus ater*, 3 km N, 4 km W Caripe, San Agustín, 1180 m elev., 27.VI.67 N. E. Peterson, et al.

Yaracuy and Carabobo. 2 LL from 1 *Mimon crenulatum*, 19 km NW Urama, Km 40, 5-25 m elev., 27.X.65, A. L. and M. D. Tuttle.

Distribution and Hosts

In Bolivia adults and nymphs have been collected in huts, and larvae have been collected on *Molossus major* and *Myotis nigricans* (Kohls and Clifford, 1964).

These collections represent a new record for Venezuela and indicate that additional collections may further expand the distribution of this species. The RML collection also contains 5 LL from *Molossus sinaloae*, 6 mi. E. Limón, 2700 ft., Jalisco, western Mexico, 26-IX-65.

Ornithodoros (*Alectorobius*) *brodyi* Matheson, 1935

Ornithodoros brodyi Matheson, 1935:351.

Material Examined

Zulia: 1 L from *Carollia perspicillata*, 10 km S, 18 km W Machiques, Kasmera, 270 m elev., 15.IV.68, N. E. Peterson, et al.; 1 L from *Carollia* sp., as above; 1 L off *Lonchorhina aurita*, as above, 17.IV.68, N. E. Peterson, et al.; 1 L off *Lonchorhina aurita*, Kasmera, nr. Sierra de Perijá, 10 km S, 18 km W Machiques, 270 m elev., 20.IV.68, N. E. Peterson, J. Matson.

Distribution and Hosts

Larvae of *O. brodyi* are commonly found on the short-tailed bat, *Carollia perspicillata*, and a variety of other bats. Adults and nymphs have been found in crevices in the walls and ceilings of caves where bats rest (Fairchild et al., 1966).

This is the first report of this species from Venezuela. It has also been reported from Mexico, Panama, Guatemala, and Cuba. In addition, the RML collection contains: 1 L from *Peropteryx kappleri* from Guatemala; 2 LL from *Natalus tumidirostris* and 3 LL (3 separate collections) from *Carollia perspicillata* from Colombia.

Ornithodoros (Alectorobius) echimys Kohls, Clifford, and Jones, 1969

Ornithodoros (Alectorobius) echimys Kohls, Clifford, and Jones, 1969:1042.

MATERIAL EXAMINED

APURE: 15 LL (paratypes) from 2 *Echimys semivillosus*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 15,28.I.66, A. L. and M. D. Tuttle; 11 LL (not paratypes) as above, A. L. and M. D. Tuttle.

LARA: 2 LL (not paratypes) from 1 *Echimys semivillosus*, 10 km N El Tocuyo, Río Tocuyo, 518 m elev., 18.VII.68. A. L. Tuttle; 27 LL (not paratypes) from 3 *Echimys semivillosus*, as above, 17-18.VII.68, A. L. Tuttle.

YARACUY AND CARABOBO: 5 LL (holotype and paratypes), from *Echimys semivillosus*, 19 km NW Urama, Km 40, 5-25 m elev., 17.X.65, A. L. and M. D. Tuttle.

DISTRIBUTION AND HOSTS

Ornithodoros echimys is known only from the larvae and at present is almost exclusively recorded from spiny rats in Venezuela. However, the RML collection also contains a single larva from *Marmosa* sp., Dept. Beni, Río Itenez, opp. Costa Marques, Bolivia, 7.IX.64 (RML 49577), which indicates that future collecting in this region may further expand its known distribution and host range.

Ornithodoros (Alectorobius) eptesicus Kohls, Clifford, and Jones, 1969

Ornithodoros (Alectorobius) eptesicus Kohls, Clifford, and Jones, 1969:1037.

MATERIAL EXAMINED

DTO. FEDERAL: 3 LL (holotype and paratypes) from *Eptesicus montosus*, 4 km NNW Caracas, 1400 m elev., 1.VIII.65, N. E. Peterson, et al.; 17 LL (paratypes) from 4 *Eptesicus montosus*, as above except 1507-1599 m elev., 22,25.VII.65, N. E. Neterson, et al.; 2 LL (not paratypes) as above, 1400 m elev., 1.VIII.65. N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

At present this species is known only from *Eptesicus montosus* from Venezuela as detailed above.

Ornithodoros (Alectorobius) hasei (Schulze, 1935)

Argas hasei Schulze, 1935:34.

Ornithodoros dunni Matheson, 1935.

MATERIAL EXAMINED

APURE: 2 ♂♂, 4 ♀♀, 3 NN, 863 LL from 59 *Noctilio labialis*, 46 km NE Pto. Paez, Hato Cariben, Río Cinaruco, 76 m elev., 15.XII.65-17.I.66, A. L. and M. D. Tuttle; 255 LL from 21 *Noctilio labialis*, 17.I.66, 38 km NW Pto. Paez, Río Cinaruco, 76 m elev., A. L. and M. D. Tuttle; 1 L from *Noctilio leporinus*, 38 km NW Pto. Paez, Río Cinaruco, 13.I.66, A. L. and M. D. Tuttle; 1 L from *Lonchorhina orinocensis*, 46 km NE Pto. Paez, Hato Cariben, Río Cinaruco, 76 m elev., 24.XII.65, A. L. and M. D. Tuttle; 1 L from *Glossophaga longirostris*, as above, 14.XII.65, A. L. and M. D. Tuttle; 1 L from *Tadarida gracilis*, 38 km NW Pto. Paez, Río Cinaruco, 76 m elev., 21.I.66, A. L. and M. D. Tuttle; 1 L from *Desmodus rotundus*, as above, 13.I.66. A. L. and M. D. Tuttle; 1 ♀, 2 NN, 1 L from 4 *Molossus ater*, as above, 17.I.66, A. L. and M. D. Tuttle; 1 ♂, 1 N, 1 L from 3 *Molossus ater*, 46 km NE Pto. Paez, Hato Cariben, Río Cinaruco, 76 m elev., 13,17.XII.65, A. L. and M. D. Tuttle; 1 L from *Molossus ater*, as above, 28.XII.65, A. L. and M. D. Tuttle; 1 ♂, 1 N from 1 *Molossus ater*, as above, except 38 km NW, 17.I.66, A. L. and M. D. Tuttle.

BOLÍVAR: 35 LL from 4 *Molossus ater*, 59 km SE El Dorado, Km 74, El Manaco, 150 m elev., 8-17.VI.66, A. L. and M. D. Tuttle; 6 LL from 1 *Artibeus jamaicensis*, 5 km NW Guasipati, 190 m elev., 29.IV.66, A. L. and M. D. Tuttle; 35+ LL from 1 *Artibeus jamaicensis*, 14 km S, 45 km E Caicara, Hato La Florida, 50 m elev., N. E. Peterson, et al.

CARABOBO: 2 LL from 1 *Molossus bondae*, Montalbán, 1091 m elev., 5.XI.67, A. L. Tuttle; 9 LL from 1 *Phyllostomus hastatus*, 6 km N Urama, 60 m elev., 17.III.66, A. L. and M. D. Tuttle.

DTO. FEDERAL: 8 LL from 1 *Sturnira lilium*, 4 km NNW, Caracas. 1465 m elev., 23.VII.65, N. E. Peterson, et al.

MIRANDA: 59+ LL from 4 *Noctilio labialis*, 5 km E Río Chico, nr. Puerto Tuy, 0 m elev., 5,17.XI.66, N. E. Peterson, et al.; 50+ LL from 1 *Noctilio leporinus*, 10 km E Río Chico nr. Tacarigua La Laguna, 0 m elev., 9.XI.66, N. E. Peterson, et al.; 5 LL from 1 *Noctilio leporinus*, 5 km E Río Chico, nr. Puerto Tuy, 0 m elev., 17.XI.66, N. E. Peterson, et al.

MONAGAS: 36+ LL from 10 *Molossus ater*, 2-3 km N, 4 km W Caripe, San Agustín, 1160-1180 m elev., 26VI-7.VII.67, N. E. Peterson, et al.; 25 LL from 1 *Molossus ater*, nr. San Agustín, 1180 m elev., 8:VII.67, N. E. Peterson, et al.; 1 L from *Akodon urichi*, 3 km N, 4 km W Caripe, San Agustín, 1180 m elev., 24.VI. 67, N. E. Peterson, et al.; 1 L from *Chiroderma salvini*, 3 km N, 4 km W Caripe, San Agustín, 1160 m elev., 27.VI.67, N. E. Peterson, et al.

SUCRE: 30+ LL from 2 *Sturnira lilium*, 14 km E Cumaná, Hda. Guanital. 0 m elev., 8-9.XII.66, N. E. Peterson, et al.; 51+ LL from 2 *Noctilio leporinus*, 21 km E Cumaná, Hda. Tunantal, 0-15 m elev., 10,17.XII. 66, N. E. Peterson, et al.; 12 LL from 1 *Molossus ater*, 14 km E Cumaná, Hda. Guanital, 0 m elev., 9.XII.66, N. E. Peterson, et al.; 1 L from *Phyllostomus hastatus*, 5 km S, 25 km E Carúpano, Manacal, 380 m elev., 3.VIII.67, N. E. Peterson, et al.; 2 LL from 1 *Desmodus rotundus*, 21 km E Cumaná, Hda. Tunantal, 0 m elev., 9.XII.66, N. E. Peterson, et al.; 1 L from *Mormoops megalophylla*, 9 km N, 4 km E Güiria, nr. Río Salado, 90 m elev., 7.VI.67, N. E. Peterson, et al.

TRUJILLO: 8 LL from 1 *Noctilio labialis*, 23 km NW Valera, nr. Agua Santa, 90 m elev., 24.VIII.65, N. E. Peterson; 2 LL from 1 *Phyllostomus hastatus*, as above. 18.X.65, N. E. Peterson.

T. F. AMAZONAS: 88 LL from 6 *Noctilio labialis*, 2 km N Tamanaco, nr. San Juan, Río Manapiare, 155 m elev., 17-19.VII.67, M. D. Tuttle, F. L. Harder; 75+ LL from 1 *Noctilio labialis*, as above, 155 m elev., 18.VII.67, M. D. Tuttle, F. L. Harder; 6 LL from 1 *Molossus ater*, Tamanaco, ea. 4 km NE San Juan, Río Manapiare. 155 m elev., 14.VII.67, M. D. Tuttle, F. L.

Harder; 1 L from *Phyllostomus hastatus*, San Juan, Río Manapiare, 155 m elev., 17.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Phyllostomus hastatus*, nr. Moracoy, 15 km down Río Manapiare from San Juan, 155 m elev., 17.VII.67, M. D. Tuttle, F. L. Harder; 11 LL from *Noctilio labialis*, *Myotis albescens*, (two labels in vial), ca. 2 km N Tamanaco, nr. San Juan, Río Manapiare, 18,26.VII.67, M. D. Tuttle, F. L. Harder; 14 LL from 4 *Molossus ater*, nr. Tamanaco, ca. 4 km NE San Juan, Río Manapiare, 155 m elev., 14,19.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Carollia* sp., as above, 19.VII.67, M. D Tuttle and F. L. Harder; 2 LL from 1 *Molossus ater*, Tamanaco, nr. San Juan, Río Manapiare, 155 m elev., 25.VII.67, M. D. Tuttle, F. L. Harder; 8 LL from 1 *Noctilio labialis*, 20 km SSE Puerto Ayacucho Las Queseras, 135 m elev., 24.IX.67, A. L. Tuttle, *et al.*; 2 LL from 1 *Molossus ater*, 2 km N Tamanaco, nr. San Juan, Río Manapiare, 155 m elev., 17.VII.67, M. D. Tuttle, F. L. Harder; 2 LL from 1 *Molossus ater*, Tamanaco, ca. 4 km NE San Juan, Río Manapiare, 155 m elev., 14.VII.67, M. D. Tuttle, F. L. Harder; 105+ LL from 2 *Noctilio labialis*, Moracoy, nr. San Juan, W side Río Manapiare, 155 m elev., 24.VII.67, M. D. Tuttle, F. L. Harder; 57+ LL from 4 *Noctilio labialis*, nr. Tamanaco, ca. 4 km NE San Juan, Río Manapiare, 155 m elev., 14.VII.67, M. D. Tuttle, F. L. Harder; 200+ LL from 2 *Noctilio labialis*, W side Río Manapiare, nr. San Juan, 155 m elev., 24.VII.67, M. D. Tuttle, F. L. Harder; 7 LL from 2 *Molossus ater*, ca. 2 km N Tamanaco, nr. San Juan, Río Manapiare, 155 m elev., 24.VII.67, M. D. Tuttle, F. L. Harder; 5 LL from 2 *Tadarida gracilis*, Boca Mavaca, Río Orinoco, 84 km SSE Esmeralda, 185 m elev., 14.II.66, A. L. and M. D. Tuttle; 100+ LL from 1 *Noctilio labialis*, nr. Moracoy, ca. 15 km down Río Manapiare from San Juan, 155 m elev., 14.VII.67, M. D. Tuttle, F. L. Harder; 50+ LL from 1 *Phyllostomus hastatus*, San Juan, Río Manapiare, 155 m elev., 17.VII.67, M. D. Tuttle, F. L. Harder; 3 LL from 1 *Tadarida gracilis*, Río Cunucunuma, nr. Belén, 150 m elev., 13.I.67, M. D. Tuttle, F. L. Harder; 25+ LL from 1 *Phyllostomus hastatus*, Moracoy, nr. Río Manapiare, 155 m elev., 13.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Phyllostomus hastatus*, nr. Moracoy, 15 km down Río Manapiare from San Juan, 155 m elev., M. D. Tuttle, F. L. Harder; 20+ LL from 1 *Uroderma magnirostrum*, nr. San Juan, Río Manapiare, 155 m elev., 17.VII.67, M. D. Tuttle, F. L. Harder; 4 LL from 2 *Molossus ater*, ¼ km N San Juan, W side Río Manapiare, 155 m elev., 5.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Carollia perspicillata*, W side Río Manapiare, nr. San Juan, 155 m elev., 24.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Artibeus jamaicensis*, San Juan, Río Manapiare, 155 m elev., 24.VII.67, M. D. Tuttle, F. L. Harder; 100+ LL from 1 *Noctilio labialis*, as above, 20.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Noctilio labialis*, nr. San Juan, E side Río Manapiare, 155 m elev., 19.VII.67, M. D. Tuttle, F. L. Harder; 1 L from *Molossus ater*, 2 km N Tamanaco, nr. San Juan, Río Manapiare, 155 m elev., 19.VII.67, M. D. Tuttle, F. L. Harder; 25 LL from 6 *Neoplatymops mattogrossensis*, 33 km SSE Puerto Ayacucho, El Raudal, 195 m elev., 4,10.X.67, A. L. Tuttle.

Yaracuy: 1 L from *Noctilio labialis*, about 10 km NW Urama, 25 m elev., 11.III.66, A. L. and M. D. Tuttle; 3 LL from 1 *Noctilio labialis*, as above except 14.III.66, A. L. and M. D. Tuttle; 1 L from *Molossus bondae*, as above, A. L. and M. D. Tuttle; 50+ LL from 1 *Noctilio labialis*, 19 km NW Urama, 25 m elev., 9.III.66, A. L. and M. D. Tuttle; 4 LL from 1 *Rhogeëssa tumida*, as above, 5-25 m elev., 27.X.65, A. L. and M. D. Tuttle; 4 LL from 1 *Phyllostomus hastatus*, 13 km NW Urama, Río Yaracuy, 25 m elev., 20.III.66, A. L. and M. D. Tuttle; 2 LL from 1 *Phyllostomus hastatus*, about 11 km NW Urama, nr. El Central, 25 m elev., 14.III.66, A. L. and M. D. Tuttle.

Yaracuy and Carabobo: 5 LL from 2 *Mimon crenulatum*, 19 km NW Urama Km 40, 5-25 m elev., 26.X.65, A. L. and M. D. Tuttle; 54+ LL from 1 *Noctilio labialis*, Yaracuy—Carabobo border, NW of Urama, 17.III.66, A. L. and M. D. Tuttle.

Yaracuy and Falcón: 92+ LL from 3 *Noctilio labialis*, 35 km NW Pto. Cabello, Boca de Yaracuy, 2 m elev., 22,29.IX; 2.X.65, A. L. and M. D. Tuttle; 1 L from *Desmodus rotundus*, as above, 30.IX.65, A. L. and M. D. Tuttle.

Zulia: 2 LL from 1 *Peropteryx* sp., 10 km S, 18 km W Machiques, Kasmera, 270 m elev., 15.IV.68, N. E. Peterson, et al.; 4 LL from 1 *Rhogeëssa minutilla*, 114 km N, 32 km W Maracaibo, nr. Cojoro, 15 m elev., 24.VI.68, N. E. Peterson, J. Matson; 2 LL from 1 *Noctilio leporinus*, 42 km WNW Encontrados, El Rosario, 5.III.68, 24 m elev., A. L. Tuttle; 4 LL from 2 *Noctilio leporinus*, 5, 28.III.68, A. L. Tuttle; 1 L from *Noctilio labialis*, as above, 5.III.68, A. L. Tuttle.

Distribution and Hosts

Larvae of *O. hasei* are common on a variety of bats throughout its geographic range. Adults are less commonly collected on bats but have been found in tree holes and old buildings containing roosting bats (Cooley and Kohls 1944, Fairchild, et al. 1966).

This species was originally described by Schulze (1935) from material collected in Venezuela. It has also been recorded from Brazil, Panama, Costa Rica, Bolivia, Nicaragua, Mexico, British Guiana, Martinique, Guadeloupe, Barbuda and Trinidad. Further, the collections contain larvae (unpublished records) from bats in Guatemala, Peru, Colombia, Dominica, Uruguay, St. Croix, and the Dominican Republic.

During examination of this vast array of specimens, considerable variation has been noted at different localities. It is entirely possible that extensive studies including all stages in the life cycle would disclose the existence of several new species in the material here recorded as *hasei*.

Ornithodoros (*Alectorobius*) *marmosae* Jones and Clifford, 1972

Ornithodoros marmosae Jones and Clifford, 1972:736.

Material Examined

Falcón: 304+ LL from 35 *Marmosa robinsoni*, Capatárida, 40-55 m elev., 19-26.VI.68, A. L. Tuttle; 25+ LL from 2 *Oryzomys concolor*, as above, 24-25.VI.68, A. L. Tuttle; 139 LL from 14 *Marmosa*

robinsoni, 48 km N, 46 km W Coro, Yabuquiva, 13 m elev., 17-20.VII.68, N. E. Peterson, J. Matson; 120 LL from 10 *Marmosa robinsoni*, 48-49 km N, 33-34 km W Coro, Moruy, 55-90 m elev., 5-13.VII.68, N. E. Peterson, J. Matson.; 28+ LL from 4 *Marmosa robinsoni*, 48 km N, 46 km W Coro, Yabuquiva, 13 m elev., 17-18.VII.68, N. E. Peterson, J. Matson.

ZULIA: 5 LL from 1 *Marmosa robinsoni*, 114 km N, 32 km W Maracaibo, nr. Cojoro, 15 m elev., 1.VII.68, N. E. Peterson, J. Matson.

COLOMBIA: Dpto. Guajira, 12+ LL from 1 *Marmosa robinsoni*, 119 km N, 32 km W Maracaibo, La Isla, 15 m elev., N. E. Peterson, J. Matson.

DISTRIBUTION AND HOSTS

Ornithodoros marmosae has been found almost exclusively on the murine opossum in Venezuela as detailed above. In addition, two collections have been reported from mice of the genus *Rhipidomys* in Venezuela. Jones and Clifford (1972) also record several larvae from *Marmosa* sp. in Colombia.

Ornithodoros (*Alectorobius*) *puertoricensis* Fox, 1947

Ornithodoros puertoricensis Fox, 1947:253.

MATERIAL EXAMINED

APURE: 2 LL from 1 *Sigmomys alstoni*, 46 km NE Pto. Paez, Hato Cariben, Río Cinaruco, 76 m elev., 10.XII.65, A. L. and M. D. Tuttle.

BOLÍVAR: 19 LL from 6 *Proechimys guyannensis*, 12 km S, 43 km E Caicara, Hato La Florida, 43-45 m elev., 15.IV-1.V.67, N. E. Peterson, et al.; 11 LL from 2 *Proechimys guyannensis*, as above, 43 m elev., 25,29.IV.67, N. E. Peterson, et al.

CARABOBO: 1 L from *Proechimys semispinosus*, 1.7 km NNW Montalbán, Montero, 1091 m elev., 7.XI.67, A. L. Tuttle; 27 LL from 1 *Proechimys semispinosus*, Montalbán, Potrerito, 1091 m elev., 25.XI.67, A. L. Tuttle.

FALCON: 4 LL from 1 *Proechimys semispinosus*, 2 km N, 10 km E Mirimire, nr. La Cumbre, +120 m elev., 3.XI.67, N. E. Peterson, et al.; 16+ LL from 3 *Proechimys semispinosus*, 4-5 km N, 10-13 km E Mirimire, nr. La Pastora, 122-130 m elev., 11-23.XI.67, N. E. Peterson, et al.; 15+ LL from 1 *Tamandua longicaudata*, 6 km SE Capatárida, Sividigua, ? elev., 26.VI.68, A. L. Tuttle; 1 L from *Marmosa robinsoni*, Capatárida, 40 m elev., 26.VI.68, A. L. Tuttle; 5 LL from 1 *Sylvilagus floridanus*, Capatárida, 40 m elev., 1.VII.68, A. L. Tuttle; 1 L from *Conepatus semistriatus*, 49 km N, 34 km W Coro, nr. Moruy, 55 m elev., 9.VII.68, N. E. Peterson, J. Matson; 1 L from lizard (tick a stray specimen?), as above except 33 km W Coro, 90 m elev., 6.VII.68, N. E. Peterson, J. Matson; 10+ LL from 1 *Proechimys semispinosus*, 49 km N, 32 km W Coro, Cerro Santa Ana, 530 m elev., 25.VII.68, N. E. Peterson, J. Matson; 2 LL from 1 *Marmosa robinsoni*, 48 km N, 46 km W Coro, Yabuquiva, 13 m elev., 17.VIII.68, N. E. Peterson, J. Matson.

GUÁRICO: 2 LL from 1 *Proechimys semispinosus*, 34 km S, 12 km W San Juan de los Morros, Hato Las Palmitas, 181 m elev., 3.I.68, N. E. Peterson, et al.; 4 LL from 2 *Marmosa robinsoni*, as above, 5-6.I.68, N. E. Peterson, et al.; 2 L from 1 *Marmosa* sp., as above, 6.I.68, N. E. Peterson, et al.; 18+ LL from 1 *Proechimys semispinosus*, as above, 7.I.68, N. E. Peterson, et al.; 8+ LL from 1 *Proechimys semispinosus*, as above, Hato Las Palmitos, 5.I.68, N. E. Peterson, et al.

LARA: 72 LL from 7 *Proechimys semispinosus*, 10 km N El Tocuyo, Río Tocuyo, 518 m elev., 15-16.VII.68, A. L. Tuttle; 15+ LL from 1 *Proechimys semispinosus*, 10 km NE Tocuyo, Caserio Boro, 537 m elev., 15.VII.68, A. L. Tuttle; 35+ LL from 4 *Proechimys semispinosus*, 10 km N El Tocuyo, Río Tocuyo, 518 m elev., 15.VII.68, A. L. Tuttle; 10+ LL from 1 *Proechimys semispinosus*, as above, A. L. Tuttle.

MONAGAS: 1 L from *Zygodontomys brevicauda*, Hato de Bejuco, 47 km SE Maturín, 36 m elev., 2.VIII.66, A. L. aod M. D. Tuttle.

T. F. AMAZONAS: 1 L from *Dasyprocta fuliginosa*, Río Manapiare, San Juan, 155 m elev., 7.VII.67, M. D. Tuttle, F. L. Harder.

TRUJILLO: 5 LL from 1 *Artibeus lituratus* (questionable host?) 20 km WNW Valera, 134 m elev., 27.VIII.65, N. E. Peterson; 7 LL from 1 *Iguana* sp., Valle Verde, 46 km WNW Valera, nr. Santa Apolonia, 29 m elev., 29.X.65, N. E. Peterson; 6 LL from 1 *Monodelphis brevicaudata*, 23 km NW Valera, nr. Agua Santa, 90 m elev., 3.IX.65, N. E. Peterson; 4 LL from 1 *Monodelphis brevicaudata*, 28 km NW Valera, nr. El Dividive, 90 m elev., 16.IX.65, N. E. Peterson.

YARACUY AND FALCÓN: 6 LL from 1 *Monodelphis brevicaudata*, (border) 35 km NW Pto. Cabello, Boca de Yaracuy, 2 m elev., 29.IX.65, A. L. and M. D. Tuttle.

YARACUY: 1 L from *Proechimys semispinosus*, 19 km NW Urama, ? elev., 12.XI.65, A. L. and M. D. Tuttle; 11 LL from 1 *Proechimys semispinosus*, 8 km N, 18 km W San Felipe, Minas de Aroa, 395 m elev., 11.XII.67, N. E. Peterson, et al.

Ornithodoros near *puertoricensis*

MATERIAL EXAMINED

GUÁRICO: 2 LL from 2 *Sylvilagus floridanus*, 16 km NW Barbacoas, nr. Hda. Los Marmones, 228 m elev., 2-3.III.66, N. E. Peterson.

DISTRIBUTION AND HOSTS

Adults of *O. puertoricensis* have not been recorded from animals in nature; however, it is assumed they remain hidden in the nests and other places frequented by their hosts. Larvae have been recorded from a number of rodents as well as from *Sylvilagus brasiliensis* and *S. floridanus* (Fairchild, et al., 1966; Kohls, 1969), and man (Kohls, et al., 1965). The records listed herein considerably extend the host range of this species; however, the record from a bat is considered questionable.

These are the first records for *O. puertoricensis* in Venezuela. It has also been reported from Panama, Trinidad, Puerto Rico, Colombia, Jamaica, Guadeloupe, and the Virgin Islands. Unpublished RML records list collections from Nicaragua, Surinam, and Uruguay.

Ornithodoros (Alectorobius) rossi Kohls, Sonenshine, and Clifford, 1965

Ornithodoros (Alectorobius) rossi Kohls, Sonenshine, and Clifford, 1965:347.

Material Examined

Miranda: 3 LL from 1 *Peropteryx macrotis*, 15 km SE Caracas, nr. El Encantado, 730 m elev., I.66, N. E. Peterson, et al.; 2 LL from 1 *Peropteryx macrotis*, as above, N. E. Peterson, et al.

Nueva Esparta: 1 L from *Glossophaga longirostris*, 2 km N, 1 km E La Asuncion, Salamanca, 38 m elev., 11.I.67, N. E. Peterson, et al.; 1 L from *Desmodus rotundus*, as above, N. E. Peterson, et al.

T. F. Amazonas: 3 LL from 1 *Lonchorhina orinocensis*, 18 km SE Puerto Ayacucho, El Gavilan, 135 m elev., 11.X.67, A. L. Tuttle.

Ornithodoros rossi or near

Apure: 8 LL from 1 *Peropteryx trinitatis*, 41 km NW Pto. Paez, Río Cinaruco, 76 m elev., 19.I.66, A. L. and M. D. Tuttle.

Distribution and Hosts

Only the larval stage of *Ornithodoros rossi* is known. It was described on the basis of specimens collected from *Leptonycteris nivalis* (=*E. canborni*) and *Eptesicus fuscus* in Arizona (USA). Kohls, et al. (1965) also recorded several collections from *Macrotus californicus* (=*M. waterhousii*) in Mexico. The above records are the first for this species in Venezuela. Unpublished records also include three lots from bats in Colombia and a single lot from *Macrotus californicus* (=*M. waterhousii*) in California (USA).

Ornithodoros (Alectorobius) setosus Kohls, Clifford, and Jones, 1969

Ornithodoros setosus Kohls, Clifford, and Jones, 1969:1036.

Material Examined

Apure: 4 LL from 2 *Tadarida gracilis*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 26-27.I.66, A. L. and M. D. Tuttle.

Distribution and Hosts

Ornithodoros setosus is known only from larvae and has not been cited since Kohls, et al. (1969) described it from specimens taken from *Tadarida laticaudata* in Brazil and reported it from *Pteronotus parnellii* and *Tadarida europs* (=*T. gracilis*) (see above) in Mexico and Venezuela, respectively.

Ornithodoros (Alectorobius) stageri Cooley and Kohls, 1941

Ornithodoros stageri Cooley and Kohls, 1941*b*: 589.

Material Examined

T. F. Amazonas: 4 LL from 2 *Tadarida gracilis*, Río Cunucunuma, nr. Belén, 150 m elev., 13.I.67, M. D. Tuttle, F. L. Harder.

Distribution and Hosts

Ornithodoros stageri has been reported from bats and bat-inhabited caves and mines in Texas, Oklahoma, Arizona, California (USA), and Mexico (Kohls, et al., 1965).

The larvae reported above are the first record of this species in Venezuela. Unpublished RML records list eight lots from *Molossus sp.* in Nicaragua and five lots from *Tararida laticaudata* and *Noctilio labialis* in Brazil. These records indicate that further collecting in South America may expand the distribution and host range of this species even further.

Ornithodoros (Alectorobius) talaje (Guérin-Méneville, 1849)

Argas talaje Guérin-Méneville, 1849:342.

Ornithodoros talaje Neumann, 1896.

Alectorobius talaje Pocock, 1907.

Ornithodoros dugesi Mazzotti, 1943.

Material Examined

Apure: 2 LL from 1 *Didelphis marsupialis*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 21.I.66, A. L. and M. D. Tuttle; 1 L from *Zygodontomys brevicauda*, as above, A. L. and M. D. Tuttle.

Ornithodoros "*talaje* group"

Apure: 1 ♀ from *Tadarida gracilis*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 21.I.66, A. L. and M. D. Tuttle.

Yaracuy: 6 LL from 1 *Zygodontomys brevicauda* about 19 km NW Urama, 25 m elev., 6.III.66, A. L. and M. D. Tuttle.

Distribution and Hosts

Ornithodoros talaje has been reported from a variety of hosts, including mammals, birds, and reptiles (Vogelsang and Santos Dias, 1953*a*, Kohls, *et al.*, 1965, Fairchild, *et al.*, 1966). It also takes refuge in cracks in walls of houses and caves and it may attack man. It inflicts a painful bite and is a vector of relapsing fever.

It was first reported from Venezuela by Neumann (1896). Its range extends from Kansas and California (USA) to Argentina.

Ornithodoros (Alectorobius) tiptoni Jones and Clifford, 1972

Ornithodoros (Alectorobius) tiptoni Jones and Clifford, 1972:738.

Material Examined

Sucre: 2 LL (holotype and paratype) from 2 *Noctilio leporinus*, 21 km E. Cumaná, Hda. Tunantal, 0 m elev., 10.XII.66, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

This species is known only from bats in Venezuela as detailed above.

Ornithodoros (*Alectorobius*) *tuttlei* Jones and Clifford, 1972

Ornithodoros tuttlei Jones and Clifford, 1972: 738.

MATERIAL EXAMINED

T. F. AMAZONAS: 4 LL (holotype and paratypes) from 1 *Agouti paca*, 40 km SSE Puerto Ayacucho, 119 m elev., 19.IX.67, A. L. Tuttle; 121+ LL (paratypes) from 1 *Tapirus terrestris*, 15 km SSE Puerto Ayacucho. ? elev., 25.IX.67, A. L. Tuttle.

DISTRIBUTION AND HOSTS

Ornithodoros tuttlei has been collected only in Venezuela from tapirs and pacas as detailed above.

Ornithodoros (*Alectorobius*) *yumatensis* Cooley and Kohls, 1941

Ornithodoros yumatensis Cooley and Kohls, 1941*b*:592.

MATERIAL EXAMINED

MONAGAS: 7 LL from 3 *Peropteryx kappleri*, 2 km S, 2 km W Caripe, Hda. Tucusito, 854 m elev., 11.VII. 67, N. E. Peterson, et al.; 2 LL from 1 *Desmodus rotundus*, as above, 13.VII.67, N. E. Peterson, et al.; 14 LL from 2 *Diphylla ecaudata*, as above, N. E. Peterson, et al.

NUEVA ESPARTA: 2 LL from 2 *Desmodus rotundus*, 2 km N, 1 km E La Asunción, Salamanca, 38-41 m elev., 11,13.I.67, N. E. Peterson et al.

YARACUY AND CARABOBO: 10 LL from 1 *Carollia perspicillata*, 19 km NW Urama, Km 40, 5-25 m elev., 25.X.65, A. L. and M. D. Tuttle.

ZULIA: 2 LL from 1 *Desmodus rotundus*, 10 km S, 18 km W Machiques, Kasmera, 270 m elev., 17.IV.68, N. E. Peterson, et al.; 5 LL from 2 *Desmodus rotundus*, nr. Sierra de Perija, 10 km S, 18 km W Machiques, Kasmera, 270 m elev., 20.IV.68, N. E. Peterson, J. Matson.

Ornithodoros yumatensis or near

APURE: 1 L from *Peropteryx trinitatis*, 38 km NNW Pto. Paez, Rio Cinaruco, 76 m elev., 19.I.66, A. L. and M. D. Tuttle.

T. F. AMAZONAS: 1 L from *Desmodus rotundus*, Tamatiaco, ca. 4 km NE San Juan, Rio Manapiare, 155 m elev., 25.VII.67, M. D. Tuttle, F. L. Harder.

ZULIA: 2 LL from 1 *Peropteryx macrotis*, 10 km S, 18 km W Machiques, Kasmera, 270 m elev., 15.IV.68, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

Ornithodoros yumatensis has previously been reported from bats or bat retreats in California, Arizona, Texas (USA) and in Mexico (Kohls, et al., 1965).

Records included above are the first from Venezuela. Unpublished RML records include larvae from bats in Georgia (USA), Nicaragua, and Colombia. These records demonstrate that this species parasitizes a variety of bats throughout the southern United States, Central America, and northern South America.

Ornithodoros (*Subparmatus*) *marinkellei* Kohls, Clifford, and Jones, 1969

Ornithodoros (*Subparmatus*) *marinkellei* Kohls, Clifford and Jones, 1969:1040.

MATERIAL EXAMINED

YARACUY: 1 L from *Pteronotus psilotis*, 8 km N, 18 km W San Felipe, Minas de Aroa, 395 m elev., 12.XII.67, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

Prior to the above record this species was known only from bats of the genus *Pteronotus* in Panama and Colombia. Further collecting will undoubtedly expand the known range of this species.

Ornithodoros (*Subparmatus*) *viguerasi* Cooley and Kohls, 1941

Ornithodoros viguerasi Cooley and Kohls, 1941*a*: 396.

MATERIAL EXAMINED

SUCRE: 2 LL from 1 *Mormoops megalophylla*, 7 km N, 5 km E Güiria, Ensenada Cauranta, 1 m elev., 14.VI.67, N. E. Peterson, et al.

YARACUY: 9 LL from 8 *Pteronotus davyi*, 8 km N, 18 km W San Felipe, Minas de Aroa, 395-400 m elev., 14-23.XII.67, N. E. Peterson, et al.; 2 LL from 2 *Pteronotus suapurensis*, as above, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

Ornithodoros viguerasi has been recorded from bat caves and several species of bats in Cuba and Trinidad (Kohls, et al., 1965) and more recently from Jamaica and Puerto Rico by Tamsitt and Fox (1970). As suggested by Kohls, et al., (1965) the material listed as this species by Fairchild, et al. (1966) from *Pteronotus* sp. in Panama turned out to be a new species, *O. marinkellei*.

The above records are the first for Venezuela. Unpublished RML records include larvae from bats in the Dominican Republic.

Ornithodoros rudis Karsch, 1880

Ornithodoros rudis Karsch, 1880:141-142.

Ornithodoros talaje Dunn, 1923 (in part).

Ornithodoros venezuelensis Brumpt, 1921. In: Brumpt 1936.

Ornithodoros migonei Brumpt, 1936.

Material Examined

Bolívar: 2 LL from 1 bird, 146 km S, 7 km E Ciudad Bolívar, Hato San José, 298 m elev., 5.IV.67, N. E. Peterson, et al.

Distribution and Hosts

Ornithodoros rudis was first reported from Venezuela by Bello and Sucre (1917) as *O. furcosus*. Brumpt in 1921 examined these specimens, came to the conclusion they represented a new species, and gave them the name *O. venezuelensis*. Schulze, cited by Osorno-Mesa (1941), compared Karsch's type material with *O. venezuelensis* from Colombia and concluded that they were the same.

Dunn (1927, 1933) considers adults and nymphs of this species to be common in houses and to attack man in Panama, Colombia, and Venezuela. Larvae have been reported to feed on chickens and small mammals. This species has also been reported from Paraguay, Ecuador, and Peru.

Ornithodoros spp.

Matebial Examined

Apure: 1 N, 4 LL from the following hosts, *Lonchorhina orinocensis, Molossus ater, Peropteryx trinitatis, Tadarida gracilis, Trachops cirrhosus.*

Bolívar: 14 LL from *Molossus ater, Proechimys guyannensis, Neoplatymops mattogrossensis.*

Carabobo: 7 LL from the following hosts, *Desmodus rotundus, Proechimys semispinosus.*

Dto. Federal: 1 L from *Molossus ater.*

Falcón: 18 LL from the following hosts, *Leptonycteris curasoae, Marmosa robinsoni, Molossus ater, Rhipidomys venezuelae, Saccopteryx bilineata.*

Guárico: 2 LL from *Pteronotus parnellii, Zygodontomys brevicauda.*

Monagas: 21 LL from the following hosts, *Diphylla ecaudata, Molossus ater, Myotis nigricans, Zygodontomys brevicauda.*

Sucre: 2 LL from *Noctilio leporinus, Zygodontomys brevicauda.*

Táchira: 1 L from *Oryzomys albigularis.*

T. F. Amazonas: 5 LL from the following hosts, *Molossus ater, Tadarida gracilis.*

Trujillo: 1 L from lizard.

Yaracuy: 1 L from *Pteronotus davyi.*

Yaracuy and Carabobo: 2 LL from *Proechimys semispinosus, Sturnira lilium.*

Zulia: 2 LL from *Peropteryx macrotis.*

Genus *Otobius* Banks, 1912

Otobius megnini (Dugés, 1884)

Argas megnini Dugés, 1884:197.

A complete synonymy for this species is given by Cooley and Kohls 1944:21.

Distribution and Hosts

The spinose ear tick occurs mainly on domestic animals but will also feed on a variety of wild mammals and occasionally on birds. It is widely distributed in many parts of the world (Kohls, et al., 1965) and there is a single record of this species from Venezuela by Pinto (1930). Because of its distinctive morphology, misidentification of *O. megnini* is unlikely, and the record is probably valid.

Family Ixodidae

Genus *Amblyomma* Koch, 1844

This genus is represented by 25 species in Venezuela. During identification of the vast number of collections of *Amblyomma* the need for a workable key became clearly apparent. Therefore, a key to the adults of the species of *Amblyomma* in North, Central, and South America is included. Species that occur in Venezuela are marked with an asterisk. *Amblyomma beaurepairei* Vogelsang and Santos Dias, 1953 and *A. guianense* Neumann, 1907 were not included in the key owing to the unavailability of material for study.

Key to the *Amblyomma* of the Western Hemisphere

Males[2]

1. Marginal groove incomplete or absent 2
   Marginal groove complete, limiting all festoons 30

2(1). Hypostome 4/4 3
   Hypstome 3/3 8

3(2). Coxae II-IV with 1 spur 4
   Coxae II-IV with 2 spurs 5

4(3). Coxa 1 with 2 broad, flat spurs plus an accessory spur situated anteriorly and medial to the 2 regular spurs. Spur on coxa IV very short. Palpal article II dorsally without a spur. Cornua absent ..... *A. goeldii*

[2]The ♂ of *A. rotundatum* is unknown. The ♀ of *A. crassum* described by Mendez Arocha and Ortiz (1957) may be another species, perhaps *A. sabanerae.*

Coxa 1 with external spur curved inward; internal broad and flat. Coxa IV with a moderately long spur. Palpal article 11 dorsally bearing a spur. Cornua present ..... *A. multipunctum*°

5(3). Ornamentation distinct 6

Ornamentation indistinct. Scutum with roughened appearance and depressed posterior to pseudoscutum. Short white hairs on venter ..... *A. extraoculatum*°

6(5). Coxa 1 with 2 broad, flat, medium-length spurs. Coxa IV with internal spur directed medially. Scutum well-ornamented around periphery, very smooth, punctations minute, not obvious ..... *A. tuberculatum*

Scutum rough or smooth with punctations obvious. Ornamentation only on scapulae 7

7(6). Scutum smooth, cervical grooves short, comma-shaped ..... *A. humerale*

Scutum rough due to punctation-free elevations, cervical grooves straight and converging ..... *A. sabanerae*

8(2). Coxa I with 1 spur 9

Coxa I with 2 spurs 10

9(8). Scutum extensively ivory-colored. Each coxa with a conspicuous pale, bulbous, elevation anterolateral to spur ..... *A. antillorum*

Scutum extensively dark brown. Pale, bulbous, anterolateral elevations lacking on all coxae ..... *A. albopictum*

10(8). Coxa II-III with 2 spurs 11

Coxa II-III with 1 spur 18

11(10). Ventral festoons with tubercles 12

Ventral festoons lacking tubercles 13

12(11). Scutum dark brown, very punctate, large, deep cervical grooves, half-moon shaped. Coxa IV with a short, stumpy spur ..... *A. scalpturatum*°

Scutum smooth with a few shallow punctations. Coxa IV with a long pointed spur ..... *A. brasiliense*

13(11). With white pilosity around posterior margin of scutum and on venter (Galapagos Islands) 14

Lacking pilosity 15

14(13). Small species, scutum about 2 mm in length, palps about 0.3 mm long, punctations fine, quite shallow ..... *A. williamsi*

Larger species, scutum about 3 mm in length, palps about 0.55 mm long, punctations numerous, deep, giving scutum rugose appearance ..... *A. pilosum*

15(13). Scutum round in outline except for straight anterolateral margins. Ventrally with one or two pairs of lightly sclerotized round plaques anterior to festoons three and four ..... *A. torrei*

Scutum without straight anterolateral margins. Ventrally lacking round sclerotized plaques anterior to festoons 16

16(15). Large species. Length of scutum >3.5 mm. Spurs of coxa I approximately equal in length ..... *A. testudinis*

Smaller species. Length of scutum <3.5 mm. External spur of coxa I longer than internal 17

17(16). Scutum elongate in outline; external spur of coxa IV narrowly elongate ca. 0.14+ mm long ..... *A. dissimile*

Scutum round in outline with a "cross" appearing in the circular field posteriorly; spur of coxa IV broadly rounded ca. 0.10 mm long ..... *A. cruciferum*

°Recorded from Venezuela

18(10). Spurs on coxa I equal or subequal 23
External spur on coxa I longer than internal 19

19(18). Spur on Coxa IV long, thin and directed posteriorly, scutum smooth, ornamented, 2 strong spurs on metatarsi II-IV. Eyes beady, orbited ..... *A. parvitarsum*
Spur on coxa IV short, spurs lacking on metatarsi II-IV. Eyes not beady 20

20(19). Marginal groove incomplete terminating at third festoon on each side. Ventral plaques large, coxa I with 2 short, unequal spurs ..... *A. longirostre*°
Marginal groove absent 21

21(20). Coxa I with external spur long and thin; internal, short, blunt. Ventrally all festoons except central with a small, pointed tubercle ..... *A. naponense*°
Ventral festoons lacking tubercles 22

22(21). Coxa I with 2 very small unequal spurs, external longer of the two. Coxae II-IV with 1 very short spur. Scutum and dorsum of basis ornate, cervical grooves deep, comma-shaped ..... *A. scutatum*°
Coxa I with external spur fairly long and thin, internal slightly shorter and stouter. Scutum light brown with dark brown ornamentation. Scutum smooth, punctations small, numerous, evenly scattered ..... *A. pacae*°

23(18). Coxa I with 2 long, stout, pincer-shaped spurs. Palpal article II dorsally with a posteriorly directed horn. Palpal article I ventrally bearing a lateral extension. Scutum ornamented with a *J* in each lateral field. Cornua large .... *A. nodosum*°
Lacking this combination of characters 24

24(23). Spurs on coxa I both long and thin 25
Spurs on coxa I both short or moderately long and broad 26

25(24). Ventrally posterior margin of basis slightly concave. Venter with very few, if any, white hairs ..... *A. calcaratum*°
Ventrally posterior margin of basis convex. Venter glabrous or with many white hairs ..... *A. striatum*

26(24). Cornua short, stubby 27
Cornua moderately long, broad 29

27(26). Spurs on coxa I very short. Coxae II-III with I short, stubby spur. Small species; length of scutum 2.5 mm. Scutum with roughened appearance (Galapagos Islands) ..... *A. darwini*
Without this combination of characters 28

28(27). Large species; length of scutum ca. 7.7 mm, surface quite rough with numerous punctations. One very small, rounded spur on coxae II-III. Ventrally lacking posterointernal tubercles on all festoons ..... *A. pictum*
Moderately sized species; length of scutum ca. 4.3 mm, surface smooth, with very few, minute punctations; 1 fairly large triangular spur on coxae II-III. Each festoon, except the median, ventrally with a small posterointernal tubercle .. *A. fulvum*

29(26). Ventral festoons extending beyond posterior margin as translucent tubercles. Ornamentation generally distributed-diffuse, pinkish. Punctations very numerous, quite deep over entire surface. Cornua moderately large ..... *A. incisum*°
Ventral festoons not extended. Scutum glabrous centrally with no punctations. Punctations numerous in peripheral areas but absent in restricted areas giving surface a bumpy appearance. Cornua very long ..... *A. varium*°

30(1). Trochanters with spurs. Palpal article I with ventral spur 31
Trochanters without spurs 33

°Recorded from Venezuela

31(30). Cornua present 32
Cornua absent. Scutum glabrous. Marginal groove continued anteriorly as a series of shallow punctations. Ornamentation indistinct. Coxa I with two widely separated subequal spurs ..... *A. pseudoconcolor*

32(31). Cornua small. Coxa I with short, subequal spurs. Scutum glabrous, inornate ..... *A. auricularium*°
Cornua large. Coxa I with internal spur much shorter than external. Scutum inornate but punctations give the surface a roughened appearance ..... *A. parvum*°

33(30). Metatarsi of legs II-IV with either 1 or 2 spurs 34
Metatarsi of legs II-IV lacking spurs 36

34(33). Two spurs on metatarsi II-IV ..... *A. maculatum*°
One spur on metatarsi II-IV 35

35(34). Festoons ventrally with a small tubercle at the posterointernal angle ..... *A. triste*
Festoons lacking tubercles ..... *A. tigrinum*°

36(33). Scutum with elongate keel-like ridge in posteromedian area ..... *A. pecarium*
Scutum without keel-like ridge 37

37(36). Eyes beady, orbited. Species introduced to Western Hemisphere from Africa ..... *A. variegatum*
Eyes not beady or orbited 38

38(37). Coxa I with 2 long spurs. Tip of external spur curving slightly outward. Ventral festoons with tubercles extending beyond posterior margin ..... *A. ovale*°
Tip of external spur not curving outward 39

39(38). Spurs of coxa I equal or subequal 40
External spur of coxa I longer than internal 43

40(39). Spurs of coxa I slender, acute. Scutum with punctations moderate in number and fine 41
Spurs of coxa I broad and stout. Scutum with punctations numerous 42

41(40). Body broad, oval. Elements of scutal pattern all of about equal intensity. Medium-sized species ..... *A. tapirellum*
Body elongate oval, lateral margins subrectilinear. Longitudinal elements of scutal pattern accentuated giving a more striped appearance. Small species ..... *A. oblongoguttatum*°

42(40). Ventral festoons extend as translucent tubercles beyond posterior margin of body. Scutal ornamentation as 2 pale orange-purple stripes lateral to scutal midline ..... *A. cooperi*°
Body without projecting ventral festoons. Scutal ornamentation as 2 bright red-orange patches in scapular area ..... *A. coelebs*°

43(39). Spur on coxa IV long, pointed, directed posteromesially. Scutum smooth with ornamentation. Punctations numerous and small. Venter with white hairs ..... *A. americanum*
Spur on coxa IV long or short but not directed posteromesially 44

44(43). Ornate. 45
Inornate. Spur on coxa IV short. Punctations on scutum numerous and shallow ..... *A. inornatum*

45(44). Coxae II-IV with a short, triangular spur. Ventral plaques large ..... *A. geayi*
Coxa IV with either a long, stout spur or an extremely long, thin spur 46

°Recorded from Venezuela

46(45). Coxa IV with an extremely long, thin spur, palps short. Palpal article II dorsally with a posteriorly directed spur. Scutal ornamentation not extensive ..... *A. neumanni*

Coxa IV with a long, stout spur. Palps long. Palpal article II dorsally lacking a spur. Scutal ornamentation extensive..... *A. cajennense*° *A. imitator*

Males of these two species are not always distinguishable but *A. imitator* tends to be smaller and narrower. The ventral tubercles do not extend as far posteriorly as those of *A. cajennense* (see Kohls, 1958).

Females[3]

1. Coxae II-III with 2 spurs 2

Coxae II-III with one distinct spur or a ridgelike spur 15

2(1). Hypostome 3/3 3

Hypostome 4/4 10

3(2). Scapular area of scutum extends straight laterally. Cervical grooves deep. White pilosity on dorsum of body 4

Scapular area of scutum does not extend straight laterally 5

4(3). Small species. Length from anterior scutal margin to posterior body margin ca. 2.3 mm. Long, white body hairs (Galapagos Islands) ..... *A. williamsi*

Moderately-sized species. Length from anterior scutal margin to posterior body margin ca. 5 mm. Short, white body hairs (Caribbean Islands) ..... *A. torrei*

5(3). Coxa IV with 1 spur 6

Coxa IV with 2 spurs 7

6(5). Scutal punctations large, numerous, deep, evenly scattered. Dorsum of body with short, white hairs ..... *A. cruciferum*

Scutal punctations shallow centrally, more numerous and deeper at periphery. Dorsum of body without short, white hairs ..... *A. dissimile*°

7(5). Spurs on coxa I medium or short. Internal spur on coxa IV very small, sometimes absent. Scutal punctations shallow centrally, deeper and more numerous at periphery. Parasites of reptiles and amphibians ..... *A. dissimile*°

Lacking above combination of characters 8

8(7). Dorsum of body densely pilose; also scapular hairs present. Scutum with numerous deep punctations (Galapagos Islands) ..... *A. pilosum*

Dorsum of body lacking dense pilosity (not from Galapagos Islands) 9

9(8). Scutum extensively pale yellowish with deep punctations haloed ..... *A. testudinis*

Scutum extensively dark brown. Punctations not haloed ..... *A. rotundatum*°

10(2). A small ventral tubercle present on all festoons except the middle one ..... *A. brasiliense*

Ventral tubercles absent on all festoons 11

11(10). Dorsum of body densely pilose ..... *A. extraoculatum*°

Dorsum lacking dense pilosity 12

12(11). Scutum much wider than long. Internal spur of coxa IV directed medially ..... *A. tuberculatum*

Scutum longer than wide or approximately as long as wide. Internal spur of coxa IV directed posteriorly 13

13(12). Very large species. Scutum about 4 mm wide. Hypostome often 4½/4½. Spurs of coxae II-IV connected by a salient sharp-edged ridge ..... *A. crassum*°

Smaller species. Hypostome 4/4. Spurs of coxae II-IV separated 14

°Recorded from Venezuela

[3]The female of *A. fulvum* is unknown.

14(13). Internal spurs of coxae I-IV diminishing in size ..... *A. sabanerae*
Internal spurs of coxae I-IV all approximately the same size ..... *A. humerale*

15(1). Hypostome 4/4 16
Hypostome 3/3 21

16(15). Scutum inornate 17
Scutum ornate 18

17(16). Scutum greater than 3 mm wide with numerous shallow punctations evenly distributed, cervical grooves converging, then slightly diverging as wide, shallow, punctate depressions ..... *A. pictum*
Scutum less than 3 mm wide with punctations deeper and more numerous centrally, fewer on lateral margins. Cervical grooves minute, shallow, comma-shaped 19

18(16). Coxa IV with definite obvious spur ..... *A. goeldii*
Coxa IV with a slight, thickened ridge, wider than long. Coxa I with 2 large subequal spurs, the external curved mesially ..... *A. multipunctum*°

19(18). Eyes large, slightly bulbous. Cervical grooves very deep and converging, then diverging almost to posterolateral margins. Deep punctations over entire scutum. Ornamentation extensive, tip of spur on coxa IV broadly rounded ..... *A. incisum*°
Without this combination of characters 20

20(19). Festoons, except the central one, with a small tubercle at the posterointernal angle. Scutal ornamentation primarily consisting of a spot in the posterior angle. With a definite ventral spur on palpal article I. Tip of spur on coxa IV sharply pointed ..... *A. scalpturatum*°
Scutal ornamentation more extensive. Lacking tubercles on festoons. Lacking a definite ventral spur on palpal article I ..... *A. varium*°

21(15). Coxa I with 1 spur only or 1 spur and an indication of an additional spur 22
Coxa I with 2 definite spurs 23

22(21). Scutum ivory-colored except around eyes. Punctations moderate in number, shallow. Conspicuous pale bulbous elevation anterolateral to spur ..... *A. antillorum*
Scutum light-colored but with dark areas more extensive. Punctations numerous, deep, and pitlike in scapular areas. Bulbous elevation reduced anterolateral to spur ..... *A. albopictum*

23(21). Trochanters with spurs 24
Trochanters without spurs 26

24(23). Scutum distinctly ornamented, broadly rounded with a somewhat sinuous posterolateral margin ..... *A. pseudoconcolor*
Scutum not ornamented, posterolateral margin not sinuous 25

25(24). Scutum brown, lateral margins elevated, depressed cervical fields. Punctations obvious, moderately deep. Very small triangular spur on coxae II-IV ..... *A. parvum*°
Scutum smooth, glabrous, pale yellowsh with brown spot at each eye. Punctations minute, indistinct. Moderately large, triangular spur on coxae II-IV ..... *A. auricularium*°

26(23). Eyes orbited, bulging 27
Eyes not orbited, flat 28

27(26). Scutum very punctate especially in lateral areas. Metatarsi II-IV without spurs (introduced from Africa) ..... *A. variegatum*
Scutum lightly punctate. Metatarsi II-IV each with 2 large spurs ..... *A. parvitarsum*

°Recorded from Venezuela

28(26). Metatarsi of legs II-IV with either 1 or 2 spurs 29
Metatarsi of legs II-IV lacking spurs 31

29(28). Metatarsi II-IV with 2 spurs ..... *A. maculatum*°
Metatarsi II-IV with 1 spur 30

30(29). Festoons ventrally with a tubercle at the posterointernal angle ..... *A. triste*
Festoons without tubercles ..... *A. tigrinum*°

31(28). White hairs obvious and extensive on dorsum of body, palps short 32
Dorsum of body glabrous or only a few fine white hairs present, palps long or short 33

32(31). Coxa I with external spur long, internal spur short ..... *A. neumanni*
Coxa I with both spurs very short (Galapagos Islands) ..... *A. darwini*

33(31). Large species. Hypostome very long and sharply pointed. Scutum longer than wide, indistinctly ornate. Legs, especially IV, inordinately long ..... *A. longirostre*°
Lacking this combination of characters 34

34(33). Coxa I with external spur much longer than internal 35
Coxa I with spurs equal or subequal 41

35(34). Scutum ornate 36
Scutum inornate ..... *A. inornatum*

36(35). Coxae II and III with broad flat ridgelike spur much wider than long 37
Coxae II and III with spurs as broad as long or slightly broader than long 39

37(36). Tubercles present at posterointernal angles of festoons 38
Tubercles lacking at posterointernal angles of festoons ..... *A. imitator*

38(37). Palpal segment 2 about 2½ times as long as segment 3. Festoons ventrally somewhat rugose and poorly defined, first 4 on each side of the median each with a well-developed tubercle at the posterointernal angle. Internal spur of coxa I broad, blunt ..... *A. pecarium*
Palpal segment 2 about twice as long as segment 3. Festoons ventrally smooth, clearly defined; each, except the median, with a much smaller tubercle at the posterointernal angle. Internal spur of coxa I narrower and more sharply pointed ..... *A. cajennense*°

39(36). Large species, coxa I with both spurs short, flat; internal spur very small ..... *A. geayi*
Medium-sized species; external spur slender, long 40

40(39). Internal spur of coxa I short, blunt, stout. Scutum with extensive ornamentation ..... *A. naponense*°
Internal spur of coxa I short, thin, acute. Scutal ornamentation usually restricted to a spot at the posterior angle ..... *A. americanum*

41(34). Spurs of coxa I short 42
Spurs of coxa I moderately long or very long 43

42(41). Spurs of coxae II-III broad ridges. Spur of coxa IV broadly rounded. Scutum lightly punctate ..... *A. cooperi*°
Spurs of coxae II-IV short, triangular. Scutum densely punctate ..... *A. scutatum*°

43(41). Scutal ornamentation consisting of a pale spot at the posterior angle and a Y-shaped figure in each lateral field. Palps heavy and rugose, segment 2 with an oblique ridge dorsally ..... *A. nodosum*°
Lacking this combination of characters 44

°Recorded from Venezuela

44(43). Coxa I with long spurs, the external curved slightly outward at its tip ..... *A. ovale*°
Coxa I with apical portion of external spur not curved 45

45(44). Coxa I with slender spurs 46
Coxa I with stout spurs 48

46(45). Scutum as long as broad, extensively copper-colored. Cervical grooves shallow. Very long, slender spurs on coxa I ..... *A. striatum*
Scutum broader than long. Cervical grooves deep 47

47(46). Genital apron overlaid on each side posterolaterally by a conspicuous, blunt, flattened projection darker than the apron and adjacent integument. Punctations not limited to anterior half of scutum ..... *A. tapirellum*
Genital apron overlaid on each side with an inconspicuous, long, slender projection. Punctations very scant on posterior half of scutum ..... *A. oblongoguttatum*°

48(45). Coxa I with external spur longer than internal. Scutum indistinctly ornate or inornate ..... *A. pacae*°
Coxa I with spurs equal in length 49

49(48). Scutum with extensive pale ornamentation. Palpal article I ventrally with a large, elongate, flattened plate ..... *A. coelebs*°
Scutal ornamentation usually an irregular, pale spot in the posterior angle and in each posterolateral field. Palpal article I ventrally lacking a large, flattened plate ..... *A. calcaratum*°

°Recorded from Venezuela

Amblyomma auricularium (Conil, 1878)

Ixodes auricularius Conil, 1878:99.

Amblyomma concolor Neumann, 1899.

Amblyomma auricularium (Conil), Lahille, 1905.

Amblyomma curruca Schulze, 1936.

MATERIAL EXAMINED

APURE: 3 ♂♂, 3 ♀♀ from 1 *Dasypus sabanicola*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 28.I.66, M. D. and A. L. Tuttle; 1 ♀, data as above; 1 ♂, data as above, except from *Cerdocyon thous*.

BOLÍVAR: 1 ♀ from *Tamandua longicaudata*, 306 m elev., 146 km S, 7 km E Ciudad Bolívar, Hato San José, 6.III.67, N. E. Peterson, et al.; 4 ♂♂, same data, except 324 m elev., 10.III.67.

CARABOBO: 1 ♀ from *Dasypus novemcinctus*, Montalbán, Potrerito, 1091 m elev., 22.XI.67, A. L. Tuttle.

FALCÓN: 9 ♂♂ from 1 *Tamandua longicaudata*, 13 km N, 13 km E Mirimire, nr. La Pastora, ± 75 m elev., 16.XI.67, N. E. Peterson, et al.

LARA: 1 ♂ from *Dasypus novemcinctus*, 10 km N El Tocuyo, Caserio Boro, 537 m elev., 21.VII.68, A. L. Tuttle.

MIRANDA: 27 ♂♂, 5 ♀♀, 1 N, 7 LL from 1 *Dasypus novemcinctus*, 27 km W Caracas, Tácata, 366 m elev., 17.XII.67, N. E. Peterson, et al.

MONAGAS: 69 ♂♂, 46 ♀♀, 3 NN from 7 *Dasypus novemcinctus*, 54 km SE Maturín, Mata de Bejuco, 18 m elev., 6-10.VI.68, A. L. Tuttle; 1 ♂ from *Conepatus semistriatus*, locality as above except 47 km SE, 36 m elev., 2.VIII.66, A. L. and M. D. Tuttle; 8 ♂♂ from 1 *Galictis vittatus*, 54 km SE Maturín, Mata de Bejuco, 18 m elev., 10.VI.68, A. L. Tuttle; 5 ♂♂ from 1 *Dasypus novemcinctus*, 47 km SE Maturín, Mata de Bejuco, 36 m elev., 8.VIII.66, A. L. and M. D. Tuttle.

TRUJILLO: 1 ♂ from *Cerdocyon thous*, 23 km NW Valera, nr. Agua Santa, 90 m elev., 15.X.65, N. E. Peterson.

DISTRIBUTION AND HOSTS

Amblyomma auricularium is commonly found on armadillos, although it has been taken on a variety of other mammals, including marsupials (Vogelsang and Santos Dias, 1953*b*; Fairchild, et al., 1966).

This species was first reported in this country by Aragão (1936). It occurs in various provinces throughout Venezuela and ranges from Mexico to Argentina.

Amblyomma beaurepairei
Vogelsang and Santos Dias, 1953

Amblyomma beaurepairei Vogelsang and Santos Dias, 1953*a*:40.

This species was described from 1 male (holotype) and 1 female (allotype) and 1 female obtained on an armadillo (*Tatus novemcinctum* = *Dasypus novemcinctus*) captured at Turiamo, Aragua, Venezuela. No further reports of this species have been recorded and the type material could not be obtained for study. However a comparison of the figures given by Vogelsang and Santos Dias with other *Amblyomma*

from Venezuela indicates this species may be valid. These authors indicate that *A. beaurepairei* is morphologically close to *A. auricularium*, *A. pseudoconcolor* and *A. cooperi*. Therefore, this species should be given consideration when specimens are identified to any one of these three species.

Amblyomma cajennense (Fabricius, 1787)

Acarus cajennensis Fabricius, 1787:372.

Ixodes cajennensis Fabricius, 1794.

Ixodes cajennensis Fabricius, 1805.

Amblyomma tenellum Koch, 1844.

Amblyomma mixtum Koch, 1844.

Amblyomma sculptum Berlese, 1888.

Amblyomma parviscutatum Neumann, 1899.

Amblyomma versicolor Nuttall and Warburton, 1908.

Amblyomma tapiri Tonelli-Rondelli, 1937.

Amblyomma finitimum Tonelli-Rondelli, 1937.

Material Examined

Apure: 1 ♀ from *Hydrochaeris hydrochoeris*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 11.I.66, A. L. and M. D. Tuttle; 2 ♂♂ from 1 *Cerdocyon thous*, 3.5 km NE Nula, La Chiricoa, 2.II.68, A. L. Tuttle; 1 ♀ from *Tapirus terrestris*, 3 km N Nula, Nulita, II.68, A. L. Tuttle; 1 ♂ from *Tayassu pecari*, locality as above, 12.II.68, A. L. Tuttle.

Bolívar: 242 ♂♂, 55 ♀♀ from 10 *Tayassu pecari*, 56 km SE El Manteco, Río Supamo, 150 m elev., 2.IV-4.V.66, A. L. and M. D. Tuttle; 10 ♂♂, 8 ♀♀ from 1 *Tayassu tajacu*, as above, 4.V.66, A. L. and M. D. Tuttle; 2 ♂♂, 3 ♀♀ on field sheet, 56 km SE Manteco, Río Supamo, 150 m elev., 8.IV and 1.IX.66, 30.III.66, A. L. and M. D. Tuttle; 1 ♀ from *Tayassu tajacu*, locality as above, 2.IV.66, A. L. and M. D. Tuttle; 1 ♀ from *Dasyprocta aguti*, locality as above, 20.IV.66, A. L. and M. D. Tuttle; 1 ♂, 6 ♀♀ from 1 *Choeroniscus minor*, 59 km SE El Dorado, Km 74, El Manaco, 150 m elev., 13.VI.66, A. L. and M. D. Tuttle; 15 ♂♂, 10♀♀ from 1 *Hydrochaeris hydrochoeris*, 56 km SE El Manteco, Río Supamo, 150 m elev., 17.IV.66, A. L. and M. D. Tuttle; 1 ♂ from *Tapirus terrestris*, 43.2 km NE Icabarú, El Mundo Nuevo de Surukum, 854 m elev., 10.V.68, A. L. Tuttle; 1 ♀ from *Tamandua longicaudata*, 146 kms. 7 km E. Ciudad Bolívar, Hato San José, 306 m elev., 6.III.67, N. E. Peterson, et al.; 11 ♂♂, 7 ♀♀ from 1 *Tayassu pecari*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, 324 m elev., 18.III.67, N. E. Peterson, et al; 7 ♂♂, 5 ♀♀ from 1 *Hydrochaeris hydrochoeris*, locality as above except 297 m elev., 11.III.67, N. E. Peterson, et al.; 122 ♂♂, 28 ♀♀ from 1 *Tapirus terrestris*, locality as above except ca. 350 m elev., 18.III.67, N. E. Peterson, et al. 9 ♂♂, 7 ♀♀ from 2 *Myrmecophaga tridactyla*, locality as above except ca. 309 and 330 m elev., 30.III, 7.IV.67, N. E. Peterson, et al.

Carabobo: 1 ♂ from *Dasyprocta aguti*, 1.7 km NW Montalbán, 1091 m elev., 6.XI.67, A. L. Tuttle; 11 ♂♂, 5 ♀♀ from *Sigmodon hispidus*, Montalbán, Potrerito, 1091 m elev., 7.XI.67, A. L. Tuttle.

Falcón: 1 ♀ from *Alouatta seniculus*, 4 km N, 10 km E Mirimire, nr. La Pastora 250 m elev., 24.XI.67, N. E. Peterson, et al.; 12 ♂♂, 6♀♀ from 1 *Tayassu tajacu*, 13 km N, 12 km E Mirimire, nr. La Pastora, 25 m elev., 3.XII.67, N. E. Peterson, et al.; 1 ♀ from *Dasyprocta aguti*, 13 km N, 10 km E Mirimire, nr. La Pastora, 70 m elev., 17.XI.67, N. E. Peterson, et al.; 1 ♂, 1 ♀ from 1 *Tamandua longicaudata*, 13 km N, 13 km E Mirimire, nr. La Pastora, ± 75 m elev., 16.XI.67, N. E. Peterson, et al.; 2 ♂♂, 1 ♀, 60+ NN from 1 *Tamandua longicaudata*, 7 km N, 13 km E Mirimire, nr. La Pastora, 275 m elev., 17.XI.67, N. E. Peterson, et al.; 146 ♂♂, 56 ♀♀, 4 NN, 2 LL from 3 *Tayassu tajacu*, 4 km N, 10 km E Mirimire, nr. La Pastora, ±75 m elev., 12.XI.67, N. E. Peterson, et al.; 200+ ♂♂ and ♀♀, 10 NN, 20+ LL from 1 *Tayassu tajacu*, 10 km N, 11 km E Mirimire, nr. La Pastora, 75 m elev., 21.XI.67, N. E. Peterson, et al.; 310+ ♂♂ and ♀♀, 425+ NN and LL from 1 *Tayassu tajacu*, 10 km N, 13 km E Mirimire, nr. La Pastora, 70 m elev., 25.XI.67, N. E. Peterson, et al.

Guárico: 1 ♂ from *Procyon cancrivorus*, 10 km N Calabozo (Emblase de Guárico), 100 m elev., 22.I.68, N. E. Peterson, et al.

Miranda: 1 ♂ from *Dasypus novemcinctus*, 27 km S, 5 km W Caracas, Tacata, 366 m elev., 17.XII.67, N. E. Peterson, et al.

T. F. Amazonas: 1 ♀ from *Priodontes maximus*, Río Manapiare, San Juan, 155 m elev., 9.VII.67, M. D. Tuttle, F. L. Harder; 3 ♂♂, 5 ♀♀ from 1 *Tapirus terrestris*, 32 km SSE Puerto Ayacucho, Raya, ? elev., 24.IX.67, A. L. Tuttle; 1 ♂ from *Tayassu pecari*, 28 km S Puerto Ayacucho, Guayabal, 135 m elev., 5.X.67, A. L. Tuttle.

Yaracuy: 2 ♂♂ from man. 8 km N, 18 km W San Felipe, Minas de Aroa, 400 m elev., 6.XII.67, N. E. Peterson, et al.

Amblyomma probably *cajennense*

Bolívar: 11 NN from 1 *Hydrochaeris hydrochoeris*, 56 km SE El Manteco, Río Supamo, 150 m elev., 17.IV.66, A. L. and M. D. Tuttle.

Falcón: 5 NN, 13 LL from 1 *Dasyprocta aguti*, 13 km N and 10 km E Mirimire, nr. La Pastora, 70 m elev., 17.XI.67, N. E. Peterson, et al.

Distribution and Hosts

In most areas *Amblyomma cajennense* is commonly reported from domestic animals and less frequently from wild hosts (Fairchild, et al., 1966; Vogelsang and Santos Dias, 1953*a*, *b*). Collections in the present study probably do not reflect the true host preference of this species in Venezuela because predominantly wild hosts were examined. These records indicate that adult *A. cajennense* will attack a variety of hosts in this area.

A. cajennense was first reported in Venezuela by Neumann (1899). A summary of information available on this species in Venezuela through 1953 is furnished by Vogelsang and Santos Dias (*loc. cit.*).

The species is widely distributed in Venezuela; and its range extends from southern Texas (USA) and islands of the Caribbean to Argentina.

Amblyomma calcaratum Neumann, 1899

Amblyomma calcaratum Neumann, 1899:226.

MATERIAL EXAMINED

APURE: 23 ♂♂, 5 ♀♀, 1 N from 2 *Tamandua longicaudata*, 4 km NW Nula, El Milagro, ? elev., 15-20.II.68, A. L. Tuttle.

DTO. FEDERAL: 7 ♂♂ from 1 *Vampyrops oratus* (host in error?), 4 km NNW Caracas, 1465 m elev., 22.VII.65, N. E. Peterson, et al.

T. F. AMAZONAS: 5 ♂♂ from 1 *Myrmecophaga tridactyla*, Río Cunucunuma, Belén, 150 m elev., 10.I.67., M. D. Tuttle, F. L. Harder; 7 ♂♂, 2 ♀♀ from 1 *Tamandua longicaudata*, 26 km S Puerto Ayacucho, 119 m elev., 11.IX.67, A. L. Tuttle; 1 ♀ from *Tamandua longicaudata*, Tamanaco, 4 km NE San Juan, Río Manapiare, 155 m elev., 11.VII.67, M. D. Tuttle and F. L. Harder.

ZULIA: 1 ♂ from *Tamandua tetradactyla*, 39 km WNW Encontrados, El Rosario, 37 m elev., 28.II.68, A. L. Tuttle; 1 ♂ from *Macrophyllum macrophyllum* (host data probably wrong), 56 km WNW Encontrados, 76 m elev., 28.III.68, A. L. Tuttle.

DISTRIBUTION AND HOSTS

According to Diaz-Ungria (1957), *A. calcaratum* was first reported from Venezuela by Fiasson (1949). Vogelsang and Santos Dias (1953*a*) also describe and record the presence in this country of a subspecies, *A. calcaratum venezuelensis*, which Santos Dias (1958*a*) considers to be identical with *A. calcaratum leucozomum* Schulze, 1936. In this study all the specimens have been listed as *A. calcaratum* because available information regarding this species is insufficient to determine the validity of described subspecies. In addition to Venezuela, this species has been recorded from French Guiana, Ecuador, Brazil, Bolivia (RML unpublished records), Paraguay, Trinidad, Colombia, Costa Rica, Panama, and British Honduras.

This tick, in the adult stage, is almost restricted to anteaters. Two records listed above from bats are extremely doubtful and need confirmation. Fairchild, et al. (1966) record adults of this species from two nonanteater hosts, i.e., *Choloepus hoffmanni* and *Mazama americana*. In addition, the RML collection contains a single collection from *Procyon cancrivorus* in Brazil.

The RML collection also contains numerous nymphs of *A. calcaratum* taken off birds in Brazil. The identification of these nymphs was accomplished by comparison with cast nymphal skins from which adult *A. calcaratum* had emerged.

Amblyomma coelebs Neumann, 1899

Amblyomma coelebs Neumann, 1899:223.

Amblyomma bispinosum Neumann, 1906.

MATERIAL EXAMINED

BOLÍVAR: 2 ♂♂, 3 ♀♀ from 1 *Tapirus terrestris*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, ca. 350 m elev., 18.III.67, N. E. Peterson, et al.; 2 ♂♂, 3 ♀♀ from 1 *Tapirus terrestris*, 43.2 km NE Icabarú, El Mundo Nueva de Surukun, 854 m elev., 10.V.68, A. L. Tuttle; 2 ♀♀ from 1 *Hydrochaeris hydrochoeris*, 56 km SE El Manteco, Río Supamo, 150 m elev., IV.66, A. L. and M. D. Tuttle.

T. F. AMAZONAS: 4 ♂♂, 4 ♀♀ from 1 *Tapirus terrestris*, Río Cunucunuma, Belén, 150 m elev., 29.I.67, M. D. Tuttle, F. L. Harder; 5 ♂♂, 11 ♀♀ from 1 *Tapirus terrestris*, Casiquiare Canal, Capibara, 130 m elev., 29.V.67, M. D. Tuttle, F. L. Harder; 8 ♂♂ from 1 *Tapirus terrestris*, 32 km SSE Puerto Ayacucho, Raya, ? elev., 25.IX.67, A. L. Tuttle. In addition, the RML collection contains 2 ♂♂, 6 ♀♀ from Tapir, Selva, Gran Sabana, 14.II.38, C. H. Mallou.

DISTRIBUTION AND HOSTS

Amblyomma coelebs is most frequently found on tapirs and occasionally is reported from other hosts such as *Hydrochaeris hydrochoeris* (see above), *Agouti paca*, and *Mazama americana* in Panama; (Fairchild, et al., 1966), and *Myrmecophaga tridactyla* in Colombia; (RML unpublished).

Neumann (1906) first recorded the presence of this species in Venezuela when he described *A. bispinosum* (= *A. coelebs.*) Since then this original record has been cited by numerous authors, but to our knowledge no other collections of this species have been reported from Venezuela. The range of *A. coelebs* extends from Mexico to Brazil and northern Argentina.

Amblyomma cooperi Nuttall and Warburton, 1908

Amblyomma cooperi Nuttall and Warburton, 1908:410.

Amblyomma lutzi Aragão, 1908.

Amblyomma ypsilophorum Schulze, 1941.

This species was not represented in the present collections.

DISTRIBUTION AND HOSTS

A. cooperi is a parasite of the capybara (*Hydrochaeris capybara=H. hydrochoeris*) and the tapir (*Tapirus americanus=T. terrestris*) and was first recorded in Venezuela by Vogelsang and Cordero (1940) from *Hydrochaeris hydrochoeris* at Zaraza, Guarico. It has also been reported from Paraguay, Bolivia, Brazil, and Argentina. The RML collection also contains

males, nymphs, and larvae from the capybara, *Hydrochaeris hydrochoeris* from Uruguay.

Amblyomma crassum Robinson, 1926

Amblyomma crassum Robinson, 1926:177.

No specimens were available for study.

Distribution and Hosts

According to Diaz-Ungria (1957), Fiasson (1949) reported *Amblyomma crassum* from *Testudo sculpta* in Venezuela (Fiasson's paper is not available). Mendez Arocha and Ortiz (1957) described the male from Venezuela, although Fairchild, et al. (1966) believed these specimens represented another species, perhaps *sabanerae*. Although we have been unable to authenticate the occurrence of *A. crassum* in Venezuela, its presence is suggested because it has been recorded from Colombia and Peru (Fairchild et al., *loc. cit*).

Amblyomma dissimile Koch, 1844

Amblyomma dissimile Koch, 1844:225.

Amblyomma irroratum Koch, 1844.

Amblyomma adspersum Koch, 1844.

Amblyomma infumatum Koch, 1844.

Ixodes flavidus Koch, 1844.

Ixodes humanus Koch, 1844.

Ixodes pulchellus Lucas, 1846.

Ixodes boarum Stoll, 1886-1893.

Amblyomma deminutivum Neumann, 1899.

Material Examined

Apure: 4 ♂♂, 7 ♀♀, 103+ NN, 3 LL from 1 snake, 6-8 km W Río Sanare on road between El Cantón and Guasdualito, ? elev., 13.II.66, N. E. Peterson; 3 ♂♂ from 1 lizard, 46 km NE Pto. Paez, Hato Cariben, Río Cinaruco, 76 m elev., 4.I.66, A. L. and M. D. Tuttle.

Falcón: 1 N from lizard, Capatárida, 40 m elev., 28.VI.68, A. L. Tuttle.

Guárico: 1 ♀, 3 NN, 7 LL from squamata, 7 km S, 5 km E Calabozo Biological Station, 100 m elev., 21.VIII.68, N. E. Peterson, J. Matson.

Miranda: 7 ♂♂ from 1 iguana, S of Río Chico, Hda. Pedogal, 1 m elev., 4.XI.66, N. E. Peterson, et al.; 4 ♂♂, 2 ♀♀, 4 NN from 1 snake, area around Río Chico, 1 m elev., 4.XI.66, N. E. Peterson, et al.

Monagas: 3 ♂♂, from 1 rattlesnake, 54 km SE Maturín, Mata de Bejuco, 18 m elev., 10.VI.68, A. L. Tuttle.

Nueva Esparta: 1 ♂ from snake, 3 km N, 1 km E La Asuncion, Salamanca, 60 m elev., 18.I.67, N .E. Peterson, et al.; 2 ♂♂ from 1 snake, nr. area 2 km S, 10 km W La Asuncion nr. Boquerón, 305 m elev., 20.I.67, N. E. Peterson, et al.; 7 ♂♂, 1 ♀, 1 N from 1 snake, 2 km N and 2 km E La Asuncion, Cerro Matasiete, 182 m elev., 27.I.67, N. E. Peterson, et al.

Sucre: 8 ♂♂, 2 ♀♀, 1 N from 2 toads, 7 km N, 5 km E Güiria, Ensenada Cauranta, 4 m elev., 7.VI.67, N. E. Peterson, et al.; 2 ♂♂, 1 ♀, 6 NN from 1 iguana, locality as above, 10.VI.67, N. E. Peterson, et al.; 14 ♂♂, 1 ♀, 2 NN from 1 *Boa*, 2 km E Cumaná, 5 m elev., 30.XII.66, N. E. Peterson, et al.

Trujillo: 15 ♂♂, 3 ♀♀, 9 NN from 1 *Boa constrictor*, 23 km NW Valera, Agua Santa, 90 m elev., 2.X.65, N. E. Peterson; 3 ♂♂ from 1 iguana, Valle Verde, nr. Santa Apolonia, 46 km WNW Valera, 29 m elev., 29.X.65, N. E. Peterson; 4 ♂♂ from 1 *Bufo*, locality as above except 52 km, 1.XI.65, N. E. Peterson; 1 ♂, 1 N, 13 LL from 1 "Taequ," 23 km NW Valera, Agua Santa, 120 m elev., 20.X.65, N. E. Peterson; 4 ♂♂, 2 ♀♀ from 1 iguana, Valle Verde, nr. Santa Apolonia, 46 km WNW Valera, 29 m elev., 29.X.65, N. E. Peterson; 1 ♀, 17 NN, 2 LL from 1 lizard, as above but 52 km, 1.XI.65, N. E. Peterson; 2 ♂♂, 1 ♀ from 1 lizard, 28 km NW Valera, nr. El Dividive, 90 m elev., 13.IX.65, N. E. Peterson.

Yaracuy and Carabobo: 23 ♂♂, 4 NN, 1 L from 1 *Proechimys semispinosus*, (host in error?) 19 km NW Urama, Km 40, 5-25 m elev., 15.X.65, A. L. and M. D. Tuttle.

Zulia: 5 NN, 38 LL from 1 lizard, 18 km N, 49 km W Maracaibo, Hda. Platanal, 75 m elev., 11.VI.68, N. E. Peterson, J. Matson; 1 ♂, 3 ♀♀, 1 N from 2 lizards, 10 km S, 18 km W Machiques, Kasmera, 250-270 m elev., 15.IV.68, N. E. Peterson, et al.

Distribution and Hosts

Amblyomma dissimile was first reported by Neumann (1899). It is obviously common on reptiles throughout Venezuela. Vogelsang and Santos Dias (1953*a*) and Diaz-Ungria (1957) also provided additional information on this species. *A. dissimile* ranges from Florida, Mexico, and the West Indies to Argentina.

Amblyomma extraoculatum Neumann, 1899

Amblyomma extraoculatum Neumann, 1899:274.

Amblyomma romitii Tonelli-Rondelli, 1939.

Amblyomma tasquei Floch and Abonnenc, 1940.

Material Examined

Bolívar: 2 ♂♂, 1 ♀, 1 N from 1 *Hydrochaeris hydrochoeris*, 56 km SE El Monteco, Río Supamo, 150 m elev., 17.IV.66, A. L. and M. D. Tuttle; 163 ♂♂, 80 ♀♀, 170 NN from 1 *Hydrochaeris hydrochoeris*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, 297 m elev., 11.III.67, N. E. Peterson, et al.; 1 ♂ from *Didelphis marsupialis*, data as above except 324 m elev., 16.III.67, N. E. Peterson, et al.

Monagas: 6 ♂♂, 8 ♀♀, 40 NN from 2 *Hydrochaeris hydrochoeris*, 54 km SE Maturín, Mata de Bejuco, 18 m elev., 8.VI.68, A. L. Tuttle.

Amblyomma probably *extraoculatum*

Monagas: 2 LL from *Hydrochaeris hydrochoeris*, 54 km SE Maturin, Mata de Bejuco, 18 m elev., 8.VI.68, A. L. Tuttle.

DISTRIBUTION AND HOSTS

Amblyomma extraoculatum was described by Neumann, 1899 from a female specimen supposedly from Singapore. Santos Dias (1955) maintains that the Asiatic origin of this species is probably in error because this species is identical to *A. romitii* Tonelli-Rondelli, 1939 and *A. tasquei*, which were described from capybaras in British Guiana and French Guiana, respectively. The RML collection also includes two lots of this tick from *Hydrochaeris hydrochoeris* from Dutch Guiana (unpublished data). Our records appear to be first for *A. extraoculatum* from Venezuela.

Amblyomma guianense Neumann, 1907

Amblyomma guianense Neumann, 1907:96.

No specimens were available for study.

DISTRIBUTION AND HOSTS

According to Diaz-Ungria (1957) Mendez Arocha identified *Amblyomma guianense* species from a pig in Venezuela. To our knowledge this constitutes the first and only record of this species in Venezuela. This species was described from Surinam (Dutch Guiana), so its occurrence in Venezuela is not surprising. This species resembles *A. multipunctum* with which it should be compared for possible synonymy when more material is available.

Amblyomma incisum Neumann, 1906

Amblyomma incisum Neumann, 1906:206

Amblyomma superbrasiliense Schulze, 1941.

MATEBIAL EXAMINED

BOLÍVAR: 10 ♂♂ from 1 *Tapirus terrestris*, 43.2 km NE Icabarú, El Mundo Nuevo de Surukun, 854 m elev., 10.V.68, A. L. Tuttle.

T. F. AMAZONAS: 4 ♂♂ from 1 *Tapirus terrestris*, 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 20.III.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Tapirus terrestris*, Río Cunucunuma, Belén, 150 m elev., 29.I.67, M. D. Tuttle, F. L. Harder; 16 ♂♂, 28 ♀♀ from 1 *Tapirus terrestris*, Casiquiare Canal, Capibara, 130 m elev., 29.V.67, M. D. Tuttle, F. L. Harder; 2 ♂♂, 6 ♀♀ from 1 *Tapirus terrestris*, 32 km SSE Puerto Ayacucho, Raya, ? elev., 24.IX.67, A. L. Tuttle.

DISTRIBUTION AND HOSTS

A. incisum is primarily a parasite of tapirs. However, deer, agouti, and man also have been reported as hosts for this species.

It has been reported from French Guiana, Ecuador, and Brazil. The RML collection contains specimens from Peru, British Guiana, Paraguay, and Venezuela. Our records are apparently the first of this species from Venezuela.

Amblyomma longirostre (Koch, 1844)

Haemalastor longirostris Koch, 1844:223.

Haemalastor crassitarsus Karsch, 1880.

Hyalomma crassitarsus Neumann, 1899.

Hyalomma longirostre Neumann, 1901.

Amblyomma giganteum Neumann, 1899.

Amblyomma avicola Neumann, 1899.

Amblyomma avecolens Cooley and Kohls, 1944.

MATERIAL EXAMINED

APURE: 3 ♂♂, 1 ♀ from 1 *Coendou prehensilis*, 3 km N Nula, Nulita, ? elev., 15.II.68, A. L. Tuttle.

FALCÓN: 7 ♂♂, 1 ♀ from 1 *Coendou prehensilis*, nr. Mirimire, ± 250 m elev., 5.X.67, N. E. Peterson, et al.

MIRANDA: 1 N from *Artibeus lituratus*, 19 km E Caracas, Curapao, 1160 m elev., 8.X.66, N. E. Peterson, et al.

MONAGAS: 3 ♂♂ from 1 *Coendou prehensilis*, 3 km N, 4 km W Caripe nr. San Agustín, 1200 m elev., 28.VI.67, N. E. Peterson, et al.; 6 ♂♂, 1 ♀ from 1 *Coendou prehensilis*, nr. San Agustín, 1200+ m elev., 7.VII.67, N. E. Peterson, et al.

ZULIA: 3 ♂♂ from 1 *Coendou prehensilis*, 58 km WNW Encontrados, El Rosario, 54 m elev., 27.II.68, A. L. Tuttle; 3 ♂♂, 1 ♀, 1 N from 1 *Coendou prehensilis*, 18 km N, 49 km W Maracaibo, Hda. planatal, 75 m elev., 8.VI.68, N. E. Peterson, J. Matson; 1 N from *Sciurus granatensis*, 3 km S, 19 km W Machiques, Novito, 1165 m elev., 3.V.68, N. E. Peterson, et al.

Amblyomma probably *longirostre*

BARINAS: 1 L from *Sciurus granatensis*, nr. Altamira, El Filo, ? elev., 21.VII.67, A. L. Tuttle.

DISTRIBUTION AND HOSTS

Adults of *Amblyomma longirostre* are primarily found on porcupines. Occasionally adults are found on *Cebus* monkeys and man (RML records). Nymphs feed on *Artibeus* and *Sciurus* (see above), and have been reported from a variety of birds throughout its range in Central and South America and as far north in the United States as Butler, Pa. (RML unpublished). This species has been known in Venezuela since 1880 when Karsch described *Haemalastor crassitarsus* (=*A. longirostre*). Since that time, it has been reported from this country by numerous authors (Vogelsang and Santos Dias, 1953*a*). The known breeding range of *A. longirostre* apparently extends from Panama to Brazil.

Amblyomma maculatum Koch, 1844

Amblyomma maculatum Koch, 1844:227.

Amblyomma rubripes Koch, 1844.

Amblyomma complanatum Berlese, 1888.

Material Examined

Monagas: 1 ♂, 1 ♀ from 2 horses, 3 km N, 4 km W Caripe, San Agustín, 1180 m elev., 7.VII.67, N. E. Peterson, et al.; 1 ♀ from *Cerdocyon thous*, 54 km SE Maturín, Mata de Bejuco, 3.VI.68, A. L. Tuttle.

Distribution and Hosts

Adults of this species feed on a variety of wild and domestic animals. The immature stages attack birds, and also are found on smaller wild mammals.

A. maculatum was first reported in Venezuela by Vogelsang and Cordero (1940) from carnivores and swine from the State of Guarico. Vogelsang and Santos Dias (1953*a*) gave additional distribution and host data for this species in Venezuela. The range of this species extends from southern United States to Colombia and Venezuela (Kohls, 1958).

Amblyomma multipunctum Neumann, 1899

Amblyomma multipunctum Neumann, 1899:226.

No Venezuelan specimens were available for study.

Distribution and Hosts

Neumann (1899) described this species from "North America" from *Tapirus* sp. and *Dicranocerus furcatus*. Then in 1911 he added Venezuela as the country of origin. This information has been repeated by several authors (Robinson, 1926; Pinto, 1930; Vogelsang and Santos Dias, 1953*a*).

Amblyomma naponense (Packard, 1869)

Ixodes naponensis Packard, 1869:65.

Amblyomma mantiquirense Aragão, 1908.

Material Examined

Apure: 17 ♂♂, 3 ♀♀ from 3 *Tayassu tajacu*, 4 km NW Nula, El Milagro, ? elev., 11-12.II.68, A. L. Tuttle; 9 ♂♂ from 1 *Tayassu pecari*, as above, 12.II.68, A. L. Tuttle.

Bolívar: 65 ♂♂, 12 ♀♀ from 7 *Tayassu pecari*, 56 km SE El Monteco, Río Supamo, 150 m elev., 2.IV, 4.V.66, A. L. and M. D. Tuttle; 12 ♂♂, 12 ♀♀ from 1 *Tayassu tajacu*, as above, 4.V.66, A. L. and M. D. Tuttle; 12 ♂♂, 3 ♀♀ from 1 *Tayassu pecari*, as above but 48 km SE, 2.IV.66, A. L. and M. D. Tuttle; 2 ♂♂, 1 ♀ off 1 *Tayassu tajacu*, data as above, 2.IV.66, A. L. and M. D. Tuttle; 1♂, 1 ♀ from 1 *Tayassu pecari*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, 18.III.67, N. E. Peterson, et al.

Falcón: 1♂ from *Agouti paca*, 5 km N, 13 km E Mirimire, nr. La Pastora, 143 m elev., 23.XI.67, N. E. Peterson, et al.

T. F. Amazonas: 6 ♂♂, 5 ♀♀ from 1 *Tayassu tajacu*, 84 km SSE Esmeralda, Boca Mavaca, 138 m elev., 3.III.67, M. D. Tuttle, F. L. Harder; 7 ♂♂, 10 ♀♀, 18 NN, from 1 *Tayassu tajacu*, 4 km NE San Juan, Río Manapiare, 155 m elev., 7.VII.67, M. D. Tuttle, F. L. Harder; 2 ♂♂, 7 ♀♀ from 1 *Tayassu pecari*, 28 km S Puerto Ayacucho, Guayabal, 135 m elev., 11.X.67, A. L. Tuttle.

Distribution and Hosts

Records for *Amblyomma naponense* indicate collared anteaters (*Tamandua*) or collared peccaries (*Tayassu*) are predominant hosts; however, other medium-sized animals are occasionally parasitized.

Apparently this is the first record of this species from Venezuela. *A. naponense* has also been reported from Panama, British and French Guiana, Brazil, Peru, and Colombia (see Fairchild, et al., 1966). In addition, the RML (Bishopp Collection) contains a lot collected in Paramaribo, Dutch Guiana.

Amblyomma nodosum Neumann, 1899

Amblyomma nodosum Neumann, 1899:224.

Amblyomma uncatum Nuttall and Warburton, 1908.

Material Examined

Bolívar: 16 ♂♂, 4 ♀♀ from 2 *Tamandua longicaudata*, 146 km S and 7 km E Ciudad Bolívar, Hato San José, 297-300 m elev., 10.III, 10.IV.67, N. E. Peterson, et al.; 2 ♂♂ from 2 *Myrmecophaga tridactyla*, locality as above except 309-330 m elev., 30.III, 7.IV.67, N. E. Peterson, et al.

Carabobo: 5 ♂♂, 1 ♀ from 1 *Tamandua longicaudata*, 9 km NE Montalbán, Cumbre Canoabo, 1245 m elev., 13.XI.67, A. L. Tuttle.

Monagas: 16 ♂♂, 10 ♀♀ from 2 *Tamandua longicaudata*, 54 km SE Maturín, Mata de Bejuco, 18 m elev., 6.VI.68, A. L. Tuttle; 12 ♂♂, 1 ♀ from 3 *Tamandua longicaudata*, data as above except 5-9.VI.68, A. L. Tuttle.

T. F. Amazonas: 1 ♂ from *Tamandua longicaudata*, Río Cunucunuma, Belén, 150 m elev., 14.II.67, M. D. Tuttle, F. L. Harder.

Distribution and Hosts

To our knowledge, only anteaters are parasitized by adults of *Amblyomma nodosum*.

A. nodosum was first reported from Venezuela by Vogelsang and Santos Dias (1953*a*) and also has been reported from Costa Rica, Panama, Guatemala, Colombia, Nicaragua, and Brazil. In addition, the RML collection contains 2 lots of this tick from anteaters in Bolivia and 4 lots containing 1 tick each from birds of Trinidad.

Amblyomma oblongoguttatum Koch, 1844

Amblyomma oblongoguttatum Koch, 1844:228.

Amblyomma vittatum Neumann, 1899.

Amblyomma darlingi Nuttall, 1912.

MATERIAL EXAMINED

APURE: 1 ♂ from *Homo sapiens*, 3 km N Nula, San Camilo, Nulita, ? elev., 1.68, A. L. Tuttle.

BARINAS: 1 ♂ from *Tayassu tajacu*, Altamira, San Pedro, ? elev., 21.XII.67, A. L. Tuttle.

BOLÍVAR: 6 ♂♂, 1 ♀ from 4 *Tayassu pecari*, 56 km SE El Manteco, Río Supamo, 150 m elev., 18.IV-4.V.66, A. L. and M. D. Tuttle; 1 ♂ from *Tayassu tajaco*, data as above except, 4.V.66; 1 ♀ from *Hydrochaeris hydrochoeris*, as above, 17.IV.66, A. L. and M. D. Tuttle; 1 ♂, 1 ♀ from 1 *Tayassu pecari*, data as above except 48 km SE, 2.IV.66, A. L. and M. D. Tuttle; 1 ♀ from *Tayassu pecari*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, 324 m elev., 18.III.67, N. E. Peterson, et al.; 6 ♂♂, 5 ♀♀ off 1 *Tapirus terrestris*, as above except ca. 350 m elev., 18.III.67, N. E. Peterson, et al.; 2 ♂♂ from 2 *Tapirus terrestris*, 43.2 km NE Icabarú, El Mundo Nueva de Surukun, 854 m elev., 10.V.67, A. L. Tuttle.

T. F. AMAZONAS: 1 ♂ from *Tapirus terrestris*, 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 20.III.67, M. D. Tuttle, F. L. Harder, 2 ♂♂, 2 ♀♀ from 1 *Tapirus terrestris*, 35 km SSE Puerto Ayacucho, Raya, ? elev., 24.IX.67, A. L. Tuttle; 1 ♂ from *Tayassu pecari*, 28 km S Puerto Ayacucho, Guayabal, 135 m elev., 5.X.67, A. L. Tuttle.

In addition to the above records, the RML collection contains several males and females from tapir, Selva, Gran Sabana, 14.II.38, C. H. Ballou and 1 ♂ from man, east slope of Mt. Marahuaca, 10.IV.50, J. Maldonado Capriles.

DISTRIBUTION AND HOSTS

Amblyomma oblongoguttatum attacks a variety of hosts wherever it occurs (Fairchild, et al., 1966). It ranges from Mexico to Brazil and Bolivia. To our knowledge, ours are the first reports of this species from Venezuela.

Amblyomma ovale Koch, 1844

Amblyomma ovale Koch, 1844:227.

Amblyomma confine Koch, 1844.

Amblyomma auronitens Berlese, 1888.

Amblyomma fossum Neumann, 1899.

Amblyomma quasistriatum Tonelli-Rondelli, 1937.

Amblyomma ovale kriegi Schulze, 1941.

Synonymy according to Aragão and Fonseca, 1961.

MATERIAL EXAMINED

APURE: 5 ♀♀ from 2 *Cerdocyon thous*, 3 km N Nula, San Camilo, Nulita, 24 m elev., 22-24.I.68, A. L. Tuttle; 2 ♂♂, 2 ♀♀ on people at camp, as above, I.68, A. L. Tuttle; 3 ♂♂, 1 ♀, 1 N from 1 *Eira barbara*, 3 km N Nula, Nulita, ? elev., 14.II.68, A. L. Tuttle; 1 ♀ from *Cerdocyon thous*, 3.5 km NE Nula, La Chiricoa, ? elev., 2.II.68, A. L. Tuttle.

BARINAS: 2 NN from 1 *Proechimys semispinosus*, 2 km SW Altamira, La Vega del Río, Santo Domingo, ? elev., 26.XII.67, A. L. Tuttle; 1 ♂, 1 ♀ from 1 *Eira barbara*, Altamira, ? elev., 29.XII.67, A. L. Tuttle.

BOLÍVAR: 3 ♂♂ from 1 *Tapirus terrestris*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, ca. 350 m elev., 18.III.67, N. E. Peterson, et al.; 2 ♂♂, 2 ♀♀ from 1 *Tapirus terrestris*, NE Icabarú, El Mundo Nuevo de Surukun, 854 m elev., 10.V.68, A. L. Tuttle; 1 N from *Proechimys guyannensis*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, 306 m elev., 5.IV.67, N. E. Peterson, et al.; 1 N from *Proechimys guyannensis*, 28 km NE Icabarú, Cinco Rancho, 775 m elev., 26.IV.68, A. L. Tuttle.

CARABOBO: 1 ♂ from *Cerdocyon thous*, 5 km SSE Montalbán, Araguita, 1091 m elev., 5.XI.67, A. L. Tuttle; 1 N from *Proechimys semispinosus*, 1.7 km NNW Montalbán, Montero, 1091 m elev., 7.XI.67, A. L. Tuttle; 1 N from *Holochilus brasiliensis*, 4.5 km SE Montalbán, Sabana Aguirre, 1055 m elev., 4.XI.67, A. L. Tuttle.

FALCÓN: 1 N from *Proechimys semispinosus*, 20 km S, 98 km E Maracaibo, Hda. Socopito, 470 m elev., 29.V.68, N. E. Peterson, et al.

MIRANDA: 8 NN from 4 *Zygodontomys brevicauda*, 6 km S Río Chico, Hacienda La Guapa, 1 m elev., 14.XI.66, N. E. Peterson, et al.; 1 ♂, 1 ♀ from 1 *Procyon cancrivorus*, nr. Río Chico, 1 m elev., 17.XI.66, N. E. Peterson, et al.

SUCRE: 1 N from *Heteromys anomalus*, 5 km S, 25 km E Carúpano, Manacal, 425 m elev., 20.VII.67, N. E. Peterson; 1 N from *Zygodontomys brevicauda*, as above except 410 elev., 21.VII.67, N. E. Peterson, et al.

T. F. AMAZONAS: 2 NN from 1 *Proechimys guyannensis*, Río Cunucunuma, Belén, 150 m elev., 17.I.67, M. D. Tuttle, F. L. Harder; 4 ♂♂, 3 ♀♀ from 1 *Tapirus terrestris*, 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 20.III.67, M. D. Tuttle, F. L. Harder; 18 ♂♂, 6 ♀♀ from 1 *Felis onca*, Río Cunucunuma, Belén, 150 m elev., 3.I.67, M. D. Tuttle, F. L. Harder; 1 ♂ from *Homo sapiens*, as above, 5.I.67, M. D. Tuttle, F. L. Harder; 1 ♂, 4 ♀♀ from 1 *Tapirus terrestris*, as above, 29.I.67, M. D. Tuttle, F. L. Harder; 18 ♂♂, 7 ♀♀ from 1 *Tapirus terrestris*, Casiquiare Canal, Capibara, 135 m elev., 29.V.67, M. D. Tuttle, F. L. Harder; 40 ♂♂, 10 ♀♀ from 1 *Tapirus terrestris*, 32 km SSE Puerto Ayacucho, Raya, ? elev., 24.IX.67, A. L. Tuttle; 1 ♀ from *Cerdocyon thous*, 26 km S Puerto Ayacucho, 119 m elev., 27.IX.67, A. L. Tuttle.

YARACUY AND CARABOBO: 2 ♀♀ from 1 *Conepatus semistriatus*, 19 km NW Urama, Km 40, 525 m elev., 18.X.65, A. L. and M. D. Tuttle.

ZULIA: LL and NN from 1 *Proechimys canicollis*, 18 km N and 51 km W Maracaibo, Hda. Rodeo, 80 m elev., 8.VI.68, N. E. Peterson, J. Matson.

Amblyomma probably *ovale*

MIRANDA: 5 LL from 1 *Zygodontomys brevicaudata*, 6 km S Río Chico, Hacienda La Guapa, 1 m elev., 14.XI.66, N. E. Peterson, et al.

TRUJILLO: 1 N from *Oryzomys concolor*, 10 km WNW Valera, nr. Isnotu, 930 m elev., 28.VIII.65, N. E. Peterson.

DISTRIBUTION AND HOSTS

In considering the host and distribution data for *Amblyomma ovale* we are following Aragão and Fonseca (1961) who consider *A. aureolatum* (Pallas, 1772) (= *striatum*, Koch 1844) to be a distinct species.

A. ovale attacks a variety of mammals as evidenced by the above records and information in the literature (Aragão and Fonseca 1961; Fairchild, et al., 1966). Based on available records it appears that immature stages are primarily parasites of rodents.

This species was first reported in Venezuela by Vogelsang and Cordero (1940). It ranges from Mexico to Argentina.

Amblyomma pacae Aragão, 1911

Amblyomma pacae Aragão, 1911:170.

Amblyomma fiebrigi Robinson, 1911.

Amblyomma nigrum Tonelli-Rondelli, 1939.

Material Examined

Barinas: 1 N from *Proechimys semispinosus*, 1 km S Altamira, ? elev., 5.I.68, A. L. Tuttle.

Falcón: 1 ♂ from *Agouti paca*, 5 km N, 13 km E Mirimire, nr. La Pastora, 143 m elev., 23.XI.67, N. E. Peterson, et al.

Miranda: 1 ♀ from *Agouti paca*, 2 km S El Guapo, ca. 400 m elev., 19.XI.66, N. E. Peterson, et al.

T. F. Amazonas: 2 ♂♂, 1 ♀ from 1 *Agouti paca*, Río Cunucunuma, Belén, 150 m elev., 20.I.67, M. D. Tuttle, F. L. Harder, 8 ♂♂, 2 ♀♀ from 1 *Agouti paca*, 84 km SSE Esmeralda, Boca Mavaca, 138 m elev., 8.III.67, M. D. Tuttle, F. L. Harder; 1 ♂, 4 NN from *Agouti paca*, 32 km SSE Puerto Ayacucho, Raya, 135 m elev., 3.X.67, A. L. Tuttle.

Zulia: 1 ♂, 2 ♀♀ from 2 *Agouti paca*, 45 km WNW Encontrados, El Rosario, 37 m elev., 23-24.III.68, A. L. Tuttle; 1 ♀ from *Agouti paca*, data as above except 39 km WNW, 7.III.68, A. L. Tuttle; 1 ♀ from *Tamandua tetradactyla*, 45 km WNW Encontrados, El Rosario, 37 m elev., 22.III.68, A. L. Tuttle.

Distribution and Hosts

Adults of *Amblyomma pacae* are frequently found on *Agouti paca* and several other mammals throughout its range.

The above records are the first for Venezuela. *A. pacae* has also ben reported from Panama, British Honduras, Brazil, Paraguay, and Colombia. The RML collection contains 1 male found biting man at Paloemeu Airstrip, Tapanahoni River, Surinam, IVC.61 H. A. Beatty.

Amblyomma parvum Aragão, 1908

Amblyomma parvum Aragão, 1908:18-19.

Material Examined

Dto. Federal: 1 ♀ from *Carollia brevicauda*, 4 km N Caracas, 1465 m elev., 21.VII.65, N. E. Peterson, et al.

Guárico: 2 ♂♂, 1 ♀, 29 NN, 25 LL from 2 *Sylvilagus floridanus*, 16 km NW Barbacoas, nr. Hda. Los Marmones, 228 m elev., 2-3.III.66, N. E. Peterson, et al.; 2 ♂♂, 4 ♀♀ from 1 *Procyon cancrivorus*, 10 km N Calabozo, Embalse de Guarico, 100 m elev., 22.I.68, N. E. Peterson, et al.

Distribution and Hosts

A. parvum has been reported from a variety of mammalian hosts (Fairchild, et al., 1966). The record from a bat cited above is questionable.

It was first reported in Venezuela by Diaz-Ungria (1957) from San Juan de los Morros (Guárico), Margarita El Yaque on the Island of Margarita, and Mantecal (Apure). In addition to Venezuela, this species has been reported from Mexico, Guatemala, Panama, French Guiana, Brazil, and Argentina.

Amblyomma rotundatum Koch, 1844

Amblyomma rotundatum Koch, 1844:229.

Amblyomma agamum Aragão, 1912.

Amblyomma goeldii Neumann, 1899 (pro parte) (according to Floch and Fauran, 1958).

Material Examined

Bolívar: 1 ♀ off *Chocroniscus minor*, 59 km SE El Dorado, Km 74, El Manaco, 150 m elev., 13.VI.66, A. L. and M. D. Tuttle.

In addition, the RML collection contains 2 ♀♀ off *Bufo marinus*, San Fernando de Atabapo, Rio Orinoco, T. . Amazonas, 9.VI.50, J. M. Capriles.

Distribution and Hosts

Amblyomma rotundatum is almost exclusively a parasite of cold-blooded animals according to Floch and Fauran, 1958, who also list this species from *Dasypus novemcinctus;* however, they call attention to the unusual host record. The above record from a bat is also unusual and requires confirmation.

It was first reported in Venezuela by Vogelsang (1936) and ranges from Mexico to Argentina. Because of the close similarity of females (males are unknown as the species is parthenogenic) of this species to *A. dissimile*, some confusion exists relative to its distribution (Kohls, 1969). The RML collection contains verified examples of *A. rotundatum* from Mexico, Guatemala, Panama, Costa Rica, Jamaica, Colombia, Peru, Bolivia, Grenada, Guadeloupe, Dutch Guiana, Martinique, Trinidad, and Brazil.

Amblyomma scalpturatum Neumann, 1966

Amblyomma scalpturatum Neumann, 1906:203.

Amblyomma brasiliense var. *guianense* Floch and Abonnenc, 1941.

Amblyomma myrmecophagium Schulze, 1933.

Amblyomma beccari Tonelli-Rondelli, 1939.

Amblyomma latepunctatum Tonelli-Rondelli, 1939.

MATERIAL EXAMINED

BOLÍVAR: 2 ♂♂, 3 ♀♀ from 1 *Tapirus terrestris*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, ca. 350 m elev., 18.III.67, N. E. Peterson, et al.; 1 ♂ off *Myrmecophaga tridactyla*, as above except ca. 330 m elev., 30.III.67, N. E. Peterson, et al.; 5 ♂♂, 1 ♀ from 1 *Tapirus terrestris*, 43.2 km NE Icabarú, El Mundo Nuevo de Surukun, 854 m elev., 10.V.68, A. L. Tuttle.

T. F. AMAZONAS: 2 ♂♂, 1 ♀ from 1 *Tapirus terrestris*, Río Cunucunuma, Belén, 150 m elev., 29.I.67, M. D. Tuttle, F. L. Harder; 5♂♂ from 1 *Myrmecophaga tridactyla*, data as above, 10.I.67, M. D. Tuttle, F. L. Harder; 11 ♂♂, 8 ♀♀ from 1 *Tapirus terrestris*, Casiquiare Canal, Capibara, 130 m elev., 29.V.67, M. D. Tuttle, F. L. Harder; 1 ♂, 5 ♀♀ from 1 *Tapirus terrestris*, 32 km SSE Puerto Ayacucho, Raya, ? elev., 24.IX.67, A. L. Tuttle.

In addition, the RML collection contains also the following collections: 3 ♂♂, 2 ♀♀ from vegetation, Camp Culebra, Northern Slope of Cerro Duida, 14.IV.50, J. M. Capriles; 2 ♂♂, 1 ♀ from tapir and sloth, Santa Lucia de Surucún (approx. 35 mi NE Icabarú), Bolivar, 12.V.68, C. E. Yunker.

DISTRIBUTION AND HOSTS

Amblyomma scalpturatum is commonly found on tapirs and rarely on anteaters and dogs.

To our knowledge, the above records constitute the first evidence for this species in Venezuela. It has also been reported from French Guiana, Dutch Guiana, British Guiana, Bolivia and Brazil (Floch and Fauran, 1958). In addition, the RML collection contains a lot from Peru and one from Colombia, off tapirs.

Amblyomma scutatum Neumann, 1899

Amblyomma scutatum Neumann, 1899:237.

Amblyomma boneti Hoffmann, 1946.

No specimens from Venezuela were available for study.

DISTRIBUTION AND HOSTS

According to Diaz-Ungria (1957) Fiasson (1949) recorded this species in Venezuela from *Myrmecophaga tridactyla* and *Drimarchon c. corais*. Diaz-Ungria (loc. cit.) also cite new host records based on identifications by Mendez as follows: *Boa c. constrictor* from Barrancas (State of Monagas); *Ameiva ameiva* and *Iguana iguana* from the island of Margarita.

It has been reported from reptiles in Mexico, Guatemala, Paraguay and Brazil. In addition, the RML collection contains specimens from Honduras, Nicaragua, Costa Rica, and El Salvador.

Amblyomma tigrinum Koch, 1844

Amblyomma tigrinum Koch, 1844:227.

Amblyomma ovatum Koch, 1844.

Amblyomma bouthieri Senevet, 1940.

MATERIAL EXAMINED

APURE: 8 ♂♂, 2 ♀♀ from 2 *Cerdocyon thous*, 38 km NNW Pto. Paez, Río Cinaruco, 76 m elev., 28.I.66, A. L. and M. D. Tuttle.

BOLÍVAR: 39 ♂♂, 11 ♀♀ from 2 *Cerdocyon thous*, 144-145 km S, 6-8 km E Ciudad Bolívar, nr. Hato San José, 309 m elev., 20-21.III.67, N. E. Peterson, et al.; 2 ♂♂, 13 ♀♀, 21 NN from 1 *Oryzomys fulvescens*, as above, 21.III.67, N. E. Peterson, et al.; 1 ♂ from *Hydrochaeris hydrochoeris*, 146 km S and 7 km E Ciudad Bolívar, nr. Hato San José, 279 m elev., 11.III.67, N. E. Peterson, et al.; 3 ♂♂, 1 ♀ from 1 *Cerdocyon thous*, as above except 297 m elev., 13.III.67, N. E. Peterson, et al.; 1 ♂, 3 ♀♀ from 1 *Cerdocyon thous*, 135 km S and 6 km E Ciudad Bolívar, nr. Hato San José, 305 m elev., 29.III.67, N. E. Peterson, et al.; 1 ♂ from *Cerdocyon thous*, as above except 146 km S, 7 km E, 300 m. elev., 30.III.67, N. E. Peterson; 1 ♂, 2 ♀♀ from 1 *Cerdocyon thous*, 56 km NE Icabarú, Descanso, 905 m elev., 14.V.68, A. L. Tuttle.

CARABOBO: 2 ♀♀ from 1 *Cerdocyon thous*, 3 km SW Montalbán, Hacienda La Cañada, 1111 m elev., 21.XI.67, A. L. Tuttle.

FALCÓN: 2 NN from 1 *Cerdocyon thous*, 10 km N, 11 km E Mirimire, nr. La Pastora, 60 m elev., 23.XI.67, N. E. Peterson, et al.

T. F. AMAZONAS: 14 ♂♂, 7 ♀♀ from 4 *Cerdocyon thous*, 26 km S Puerto Ayacucho, 119 m elev., 27.IX.67, A. L. Tuttle.

DISTRIBUTION AND HOSTS

Amblyomma tigrinum is mainly a parasite of wild and domestic carnivores and rarely attacks other hosts (Floch and Fauran, 1958).

This is the first report of this species from Venezuela. It has also been recorded from French Guiana, Brazil, Peru, Argentina, and Paraguay. In addition, the RML collection now contains 1 lot from Chile, 5 lots from Bolivia, and 3 lots from Uruguay.

Amblyomma varium Koch, 1844

Amblyomma varium Koch, 1844:224.

Amblyomma gertschi Cooley and Kohls, 1942.

No material was collected in the current survey. However, the RML collection contains 1 ♂, 1 ♀ from *Bradypus tridactylus* (= *B. infuscatus*) Rancho Grande, 3500 m elev., 5.V.45, William Beebe.

DISTRIBUTION AND HOSTS

The only other record of *Amblyomma varium* from Venezuela is that of Vogelsang and Cordero (1940) from *Bradypus tridactylus* (= *B. infuscatus*) in the states of Aragua and Carabobo. The preferred hosts for this species are *Bradypus* sp. and *Choloepus* sp. It has been reported from Brazil, Nicaragua, Panama, Colombia, the Guianas, Argentina, Chile, Costa Rica, and Peru (Fairchild, et al., 1966). The

RML collection also contains a single lot from Guatemala.

Amblyomma spp.

The number of immature *Amblyommas* that are unidentifiable emphasizes a basic problem in the study of South American ticks. Life histories of most species are unknown and few have been reared in the laboratory. Confusion has been compounded by the fact that the larvae and nymphs are often taken on different hosts. A great contribution to the knowledge concerning ticks of this area could be accomplished by basic laboratory and field studies of their life history.

Material Examined

Apure: 29 NN, 212 LL were found on the following hosts: *Agouti paca, Cebus nigrivittatus, Cerdocyon thous, Coendou prehensilis, Dasyprocta* sp., *Echimys semivillosus, Hydrochaeris hydrochoeris, Homo sapiens, Mazama americana, Proechimys semispinosus, Tayassu pecari,* and *T. tajacu.*

Aragua: 3 NN, 2 LL were found on *Akodon urichi* and *Myotis keaysi.*

Barinas: 23 NN, 177 LL were found on the following hosts: *Proechimys semispinosus, Sciurus granatensis, Sigmodon hispidus, Tayassu tajacu,* and *Uroderma bilobatum.*

Bolívar: 784 NN, 460 LL were found on the following hosts: *Agouti paca* bird, *Carollia perspicillata, Cerdocyon thous, Cebus albifrons, Didelphis* sp., *D. marsupialis, Dasypus* sp., *Dasypus kappleri, Dasyprocta aguti, Holochilus brasiliensis, Homo sapiens, Hydrochaeris, hydrochoeris, Lutreolina crassicaudata,* lizard, *Myrmecophaga tridactyla, Mazama americana, M. gouazoubira, Monodelphis brevicaudata, Marmosa cinerea, M. murina, Neacomys tenuipes, Nectomys squamipes, Nasua nasua, Noctilio labialis, Odocoileus virginianus, Oryzomys* sp., *O. fulvescens, O. concolor, Proechimys guyannensis, P. hoplomyoides, Pithecia pithecia, Philander opossum, Rhipidomys macconnelli, Sciurus igniventris, Sturnira lilium, S. tildae, Sylvilagus brasiliensis, Tapirus terrestris, Tayassu pecari, T. tajacu,* and *Zygodontomys brevicauda.*

Caraboro: 5 NN, 19 LL were found on the following hosts: *Glossophaga soricina, Monodelphis brevicaudata, Oryzomys fulvescens,* and *Sigmodon hispidus.*

Dto. Federal: 32 NN, 81 LL were found on the following hosts: *Akodon urichi, Carollia brevicauda, Eptesicus montosus, Felis pardalis,* and *Glossophaga longirostris.*

Falcón: 311 NN, 183 LL were found on the following hosts: *Agouti paca, Alouatta seniculus, Cerdocyon thous, Dasyprocta aguti, Didelphis marsupialis, Glossophaga soricina, Heteromys anomalus, Homo sapiens,* lizard, *Mazama americana, M. gouazoubira, Monodelphis brevicaudata, Odocoileus virginianus, Oryzomys concolor, Proechimys semispinosus, Saccopteryx bilineata, Sigmodon hispidus, Tamandua longicaudata, Tayassu tajcu,* and *Zygodontomys brevicauda.*

Guárico: 46 NN, 14 LL were found on the following hosts: *Artibeus jamaicensis, Heteromys anomalus, Marmosa robinsoni, Monodelphis brevicaudata, squamata, Sylvilagus floridanus, and Zygodontomys brevicauda.*

Lara: 3 LL were found on *Sigmodon hispidus.*

Miranda: 19 NN, 60 LL were found on the following hosts: bird, *Bradypus infuscatus,* lizard, *Monodelphis brevicaudata, Sciurus granatensis, Vampyrops helleri,* and *Zygodontomys brevicauda.*

Monagas: 17 NN, 17 LL were found on the following hosts: *Dasypus novemcinctus, Didelphis marsupialis, Felis yagouroundi, Galictis vittatus, Holochilus brasiliensis, Oryzomys fulvescens, Sigmomys alstoni, Sylvilagus floridanus, Tamandua longicaudata,* and *Zygodontomys brevicauda.*

Nueva Esparta: 3 NN, 9 LL were found on the following hosts: *Homo sapiens, lizard, Marmosa robinsoni,* snake, and *Sylvilagus floridanus.*

Sucre: 44 NN, 92 LL were found on the following hosts: *Didelphis marsupialis,* lizard, *Marmosa robinsoni, Oryzomys bicolor, Proechimys semispinosus, Pteronotus parnellii, Rattus rattus, Heteromys anomalus,* and *Zygodontomys brevicauda.*

T. F. Amazonas: 166 NN, 453 LL were found on the following hosts: *Agouti paca, Bassaricyon gabbi, Callicebus torquatus, Cerdocyon thous, Chiroptes satanas, Dasyprocta fuliginosa, Didelphis marsupialis, Echimys armatus, Hydrochaeris hydrochoeris, Isothrix bistriata, Mazama americana, Molossops planirostris, Molossus ater, Myoprocta pratti, Oryzomys concolor, Philander opossum, Proechimys semispinosus, Pithecia pithecia, Sciurus igniventris, S. gilvigularis, Tayassu pecari, Tamandua longicaudata,* and *Tapirus terrestris.*

Trujillo: 86 NN, 103 LL were found on the following hosts: *Ameiva* sp., *Artibeus jamaicensis, A. lituratus, Carollia perspicillata, Cerdocyon thous, Desmodus rotundus, Didelphis marsupialis, Heteromys anomalus, Iguana* sp., lizard, *Metachirus nudicaudatus, Monodelphis brevicaudata, Proechimys semispinosus,* and *Zygodontomys brevicauda.*

Yaracuy: 5 NN, 11 LL were found on the following hosts: *Chiroderma villosum, Chironectes minimus, Felis pardalis, Marmosa robinsoni, Noctilio labialis, Oryzomys fulvescens, Proechimys semispinosus, Uroderma bilobatum,* and *Zygodontomys brevicauda.*

Yaracuy and Carabobo: 2 NN, 2 LL were found on the following hosts, *Carollia perspicillata* and *Proechimys semispinosus.*

Zulia: 241 NN, 124 LL were found on the following hosts: *Agouti* sp., *Agouti paca, Aotus trivirgatus, Artibeus jamaicensis,* bird, *Cebus albifrons, Cerdocyon thous, Conepatus semistriatus, Dasyprocta variegata, Dasypus novemcinctus, Eira barbara,* lizard, *Metachirus nudicaudatus, Oryzomys capito, Proechimys canicollis, P. semispinosus, Sciurus granatensis, Sigmodon hispidus, Tamandua tetradactyla,* and *Zygodontomys brevicauda.*

Genus *Anocentor* Schulze, 1937

Anocentor nitens (Neumann, 1897)

Dermacentor nitens Neumann, 1897:376.

Anocentor columbianus Schulze, 1937.

Otocentor nitens Cooley, 1938.

Material Examined

Bolívar: 1 ♀, 1 N from 1 *Cerdocyon thous,* 146 km S, 7 km E Ciudad Bolívar, Hato San José, 300 m elev., 30.III.67, N. E. Peterson, et al.

Monagas: 3 ♂♂, 3 ♀♀, 4 NN, 10 LL from 3 horses, 3 km N, 4 km W Caripe, San Agustín, 1180 m elev., 7.VII.67, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

The only known species of *Anocentor*, "tropical horse tick," is largely confined to domestic animals.

Neumann (1901:267) first recorded *A. nitens* in Venezuela. Vogelsang and Santos Dias (1935*b*) reported this species from capybara at La Caimana, Guárico, Venezuela, and Santos Dias (1958*b*) examined 11 males, 12 females, and 2 nymphs from a wild horse, La Borguera, Venezuela (in the Pasteur Institute collection).

A. nitens is exclusively a New World tick and is confined to the warmer climates. Its distribution extends from southern Texas and Florida, throughout the West Indies and Central America, southward to Bolivia and Brazil (Leite and Ferreira, 1966).

Genus *Boophilus* Curtice, 1891

Boophilus microplus (Canestrini, 1887)

Haemaphysalis micropla Canestrini, 1887:104.

Rhipicephalus micropla Canestrini, 1890.

Rhipicephalus annulatus var. *caudatus* Neumann, 1897.

Rhipicephalus australis Fuller, 1899.

Boophilus australis Stiles and Hassall, 1901.

Boophilus annulatus var. *microplus* Neumann, 1901.

Margaropus micropla Neumann, 1911.

Margaropus annulatus australis Hooker, Bishopp, and Wood, 1912.

Uroboophilus fallax Minning, 1934.

Uroboophilus krijgsmani Minning, 1934.

Uroboophilus rotundiscutatus Minning, 1934.

Uroboophilus cyclops Minning, 1934.

Boophilus calcaratus hispanicus Minning, 1935.

Boophilus annulatus microplus Travis, 1941.

MATERIAL EXAMINED

APURE: 1 ♂ from *Cerdocyon thous*, 3 km N Nula, San Camilo, Nulita, 24 m elev., 22.I.68, A. L. Tuttle.

BOLÍVAR: 3 ♂♂, 6 ♀♀, 2 NN from 1 *Odocoileus virginianus*, 146 km S, 7 km E Ciudad Bolívar, Hato San José, ca. 330 m elev., 16.III.67, N. E. Peterson, et al.; 2 NN from 1 *Cerdocyon thous*, as above, 300 m elev., 30.III.67, N. E. Peterson, et al.

FALCÓN: 7 ♀♀ from 1 *Tayassu tajacu*, 8 km N, 13 km E Mirimire, nr. La Pastora, 60 m elev., 2.XII.67, N. E. Peterson, et al.; 1 ♀ from *Odocoileus virginianus*, 7 km N, 11 km E Mirimire, nr. La Pastora, 50 m elev., 26.XI.67, N. E. Peterson, et al.; 1 ♂, 6 NN from 1 *Mazama gouazoubira*, as above except +75 m elev., 15.XI.67, N. E. Peterson, et al.; 1 ♀, 3 NN from 1 *Odocoileus virginianus*, as above, except 9 km N, 12 km E, 19.XI.67, N. E. Peterson, et al.

MONAGAS: 2 ♀♀ from a horse, 3 km N, 4 km W Caripe, San Agustín, 1180 m elev., 7.VII.67, N. E. Peterson, et al.

TACHIRA: 2 ♂♂, 1 ♀, 15 NN from 1 *Carollia perspicillata* (host in error?), 45 km N, 6 km E San Cristóbal, Las Mesas, 460 m elev., 10.II.68, N. E. Peterson, *et al.*

TRUJILLO: 1 L from *Sturnira lilium*, 23 km NW Valera, near Agua Santa, 90 m elev., 16.VIII.65, N. E. Peterson.

DISTRIBUTION AND HOSTS

Vogelsang and Santos Dias (1953*a*) stated that Pinto (1930) was first to report *Boophilus microplus* from Venezuela, although there are at least two earlier references (Rivas, 1919; Reyne, 1923). Minning (1934) recorded this species from cattle in Venezuela. Vogelsang and Cordero (1940) found it frequently on cattle in the states of Aragua, Carabobo, Guárico, and Lara. Vogelsang and Santos Dias (1953*b*) discussed collections from Sabana de Piedra, Monagas; San Carlos, Cojedes; and Kavanayen Gran Sabana, Bolívar (all from *Bos taurus*); and Santos Dias (1958*b*) recorded a collection in the Pasteur Institute from Guárico, Venezuela.

B. microplus is primarily a cattle ectoparasite although it is also found on horses, sheep, goats, and many other wild and domestic animals.

This species has the widest distribution of any species of the genus. Its range includes Mexico, Central and South America, East and South Africa, Madagascar, Australia, and much of the southern half of Asia.

Genus *Haemaphysalis* Koch, 1844

Haemaphysalis juxtakochi Cooley, 1946

Haemaphysalis juxtakochi Cooley, 1946:48.

Haemaphysalis kochi Aragão, 1908.

Haemaphysalis kohlsi Aragão and Fonseca, 1951.

MATERIAL EXAMINED

BOLÍVAR: 5 NN from 2 *Dasyprocta aguti*, 56 km SE El Manteco, Río Supamo, 150 m elev., 2-10.IV.66, A. L. and M. D. Tuttle; 25 ♂♂, 8 ♀♀, 2 NN from 2 *Mazama americana*, as above, 14,17.IV.66, A. L. and M. D. Tuttle; 2 ♂♂, 3 ♀♀ from 1 *Tapirus terrestris*, 146 km S and 7 km E Ciudad Bolívar, Hato San José, ca. 350 m elev., 18.III.67, N. E. Peterson, et al.; 1 ♂, 2 ♀♀ from 1 *Mazama americana*, as above except 306 m elev., 8.IV.67, N. E. Peterson, et al.; 2 NN from human, Panji, NE Icabarú, 9.V.68, C. E. Yunker; 1 N, 2 LL from 1 *Dasyprocta aguti*, 43.2 km NE Icabarú, El Mundo de Surukun, 854 m elev., 4.V.68, A. L. Tuttle; 1 ♀ from *Mazama gouazoubira*, Icabarú, 473 m elev., 13.V.68, A. L. Tuttle; 1 N from *Mazama gouazoubira*, 51.2 km NE Icabarú, Campo Grande, 976 m elev., 9.V.68, A. L. Tuttle; 2 NN from 1 *Dasyprocta aguti*, 45 km NE Icabarú, Santa Lucía de Suru-

kun, 851 m elev., 12.V.68, A. L. Tuttle; 8 ♂♂, 1 ♀ from 1 *Tapirus terrestris*, 43.2 km NE Icabarú, El Mundo Nuevo de Surukun, 854 m elev., 10.V.68, A. L. Tuttle.

Falcón: 1 ♀, 2 LL from 1 *Mazama americana*, 4 km N, 11 km E Mirimire, nr. La Pastora, 240 m elev., 14.XI.67, N. E. Peterson, et al.

Nueva Esparta: 3 ♀♀ from 1 *Sylvilagus floridanus*, 3 km N, 1 km E La Asuncíon, nr. Salamanca, 50 m elev., 18.I.67, N. E. Peterson, et al.

Táchira: 1 ♂, 1 ♀ from 1 *Carollia perspicillata* (host in error?), 45 km N, 6 km E San Cristóbal, Las Mesas, 460 m elev., 10.II.68, N. E. Peterson, et al.

T. F. Amazonas: 1 N from *Sciurus aestuans*, 68 km SE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 16.III.67, M. D. Tuttle and F. L. Harder; 26 ♂♂, 2 ♀♀ from 1 *Tapirus terrestris*, as above, 20.III.67, M. D. Tuttle, F. L. Harder; 6 LL from 1 *Sciurus igniventris*, as above, 12.III.67, M. D. Tuttle, F. L. Harder; 6 NN, 31 LL from *Dasyprocta fuliginosa* Río Manapiare, San Juan, 155 m elev., 7.VII.67, M. D. Tuttle, F. L. Harder; 1 N, 2 LL from 1 *Dasyprocta fuliginosa*, nr. Moracoy, about 10 mi. down Río Manapiare from San Juan, 155 m elev., 10.VII.67, M. D. Tuttle, F. L. Harder; 3 ♀♀, 1 ♂, 2 NN from 1 *Mazama americana*, Río Manapiare, W side, above Moracoy, 155 m elev., 13.VII.67, M. D. Tuttle, F. L. Harder; 6 NN, 1 L from 1 *Tayassu tajacu*, Tamanaco, 4 km NE San Juan, Río Manapiare, 155 m elev., 7.VII.67, M. D. Tuttle, F. L. Harder; 5 ♂♂, 2 ♀♀ from 1 *Mazama americana*, Río Manapiare, San Juan, 155 m elev., 26.VII.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Tapirus terrestris*, 15 km SSE Puerto Ayacucho, Raya, elev. ?, 25.IX.67, A. L. Tuttle; 1 ♂ from *Cebus nigrivittatus*, Río Manapiare, San Juan, 155 m elev., 26.VII.67, M. D. Tuttle, F. L. Harder; 2 NN from 1 *Dasyprocta fuliginosa*, Río Manapiare, San Juan, 155 m elev., 10.VII.67, M. D. Tuttle, F. L. Harder.

Distribution and Hosts

Haemaphysalis juxtakochi was first reported under the name *H. kochi* from Venezuela by Vogelsang and Cordero (1940) from *Mazama* sp. and *Odocoileus* sp. Cooley (1946) recorded it from a tapir collected at Selva, Gran Sabana, Venezuela. In addition, *H. juxtakochi* has been recorded from Mexico, Panama, Brazil, Colombia, Uruguay, Argentina, and Trinidad. The RML collection contains specimens from Bolivia and Surinam.

Preferred hosts for adults of *H. juxtakochi* appear to be species of deer although it is also found on rodents, perissodactyls, and rarely on lagomorphs and primates.

Haemaphysalis leporispalustris (Packard, 1869)

Ixodes leporis-palustris Packard, 1869:67.

Gonixodes rostralis Dugès, 1888.

Rhipistoma leporis Osborn, 1896.

Haemaphysalis leporis Neumann, 1897.

Haemaphysalis proxima Aragão, 1909.

Haemaphysalis leporis var. *proxima* Aragão, 1911.

Material Examined

Falcón: 10 ♂♂, 11 ♀♀, 10 NN, 2 LL from 2 *Sylvilagus floridanus*, 49 km N, 34 km W Coro, Moruy, 55 m elev., 15.VII.68, N. E. Peterson, J. Matson.

Nueva Esparta: 2 ♂♂, 2 ♀♀, 16 NN, 29 LL from 4 *Sylvilagus floridanus*, 3 km N, 1 km E La Asunción, nr. Salamanca, 50-60 m elev., 18-20.I.67, N. E. Peterson, et al.; 1 ♂, 2 NN from 1 *Sylvilagus floridanus*, 35 km W Porlamar, nr. Boca del Río, 10 m elev., 30.I.67, N. E. Peterson, et al.

Distribution and Hosts

Vogelsang and Santos Dias (1953*b*) reported the first collection of *H. leporispalustris* from Venezuela, Caicara del Orinoco, Bolívar, from *Oryctolagus* sp. Kohls (1960) recorded a collection of 2 males and 1 female from *Sylvilagus floridanus valenciae* collected in the state of Aragua.

The common rabbit tick ranges widely from Alaska and Canada throughout the United States southward to Argentina and has recently been recorded from the Caribbean area (Kohls, 1969). *H. leporispalustris* in the adult stage is very common on members of the family Leporidae although not restricted to this group. Immature stages may be found on a variety of small mammals and commonly on birds.

Haemaphysalis sp. (mouth parts missing)

Material Examined

T. F. Amazonas: 1 N from *Dasyprocta fuliginosa*, Río Manapiare, San Juan, 155 m elev., 21.VII.67, M. D. Tuttle, F. L. Harder.

Genus *Ixodes* Latreille, 1795

Ixodes auritulus group

Material Examined

Mérida: 5 LL from 1 *Seytalopus* sp., 5.5 km E, 1 km S Tabay, nr. Middle Refugio, 2640 m elev., 16.IV.66, N. E. Peterson; 1 L from *Oryzomys minutus*, as above, 2630 m elev., 14.IV.66, N. E. Peterson; 2 LL from 1 *Thomasomys lugens*, as above, 2710 m elev., 15.IV.66, N. E. Peterson.

Trujillo: 2 LL from 1 bird, 15 km E Trujillo, Hda. Misisí, 2360 m elev., 20.I.66, N. E. Peterson; 1 L from *Oryzomys albigularis*, as above except 14 km E, 2215 m elev., 26.I.66, N. E. Peterson; 1 L from *Thomasomys lugens*, as above, 2225 m elev., 27.I.66, N. E. Peterson.

Distribution and Hosts

Arthur (1960) has called attention to the morphological variation present in ticks ascribed to the *Ixodes auritulus* group. All of the above specimens are similar morphologically; but, in the absence of nymphal or adult stages, definite assignment of this material to *I. auritulus* has not been attempted.

This is the first report of *Ixodes auritulus* group from Venezuela. It has been reported from a variety of seabirds in North, Central, and South America by Cooley and Kohls (1945) and Australian Antarctica and New Zealand by Arthur (1960). Central and South American countries where it occurs include Costa Rica, Guatemala, Peru, Argentina, Brazil, and Chile.

Occurrence of larvae of this species group on mammals as indicated above is unusual and requires verification.

Ixodes (Exopalpiger) jonesae Kohls, Sonenshine, and Clifford, 1969

Ixodes jonesae Kohls, Sonenshine, and Clifford, 1969:447.

MATERIAL EXAMINED

MÉRIDA: 1 ♀ holotype, 34 LL paratypes from 1 *Thomasomys laniger*, 4 km S, 6.5 km E Tabay, La Coromoto, 3170 m elev., 12.III.66, N. E. Peterson; 1 ♂ allotype from *Thomasomys laniger*, as above, 11.III.66, N. E. Peterson; the folowing are all paratypes, 1 ♀, 2 NN, 14 LL from 9 *Thomasomys laniger*, as above, 3170-3180 m elev., 11-16.III.66, N. E. Peterson; 1 ♀, 1 L (paratypes) from 1 *Oryzomys minutus*, as above, 13.III.66, N. E. Peterson; 1 L from *Oryzomys minutus*, as above, 3180 m elev., 18.III.66, N. E. Peterson;5 NN from 3 *Thomasomys laniger*, 3-4 km W Timotes, nr. Paramito, 3147, 3206 and 3230 m elev., 14-16.II.66, N. E. Peterson; 1 L (not paratype) from *Thomasomys laniger*, 4 km S, 6.5 km E Tabay, La Coromoto, 3185 m elev., 15.III.66, N. E. Peterson.

TÁCHIRA: 25+ L from 1 *Caenolestes obscurus*, 35 km S, 22 km W San Cristóbal, Buena Vista, 8.III.68, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

This species of *Exopalpiger* is known only from the opossum, *Caenolestes*, and from rodents, *Thomasomys* and *Oryzomys* species in the states of Mérida and Táchira, Venezuela.

Ixodes (Ixodes) lasallei Mendez Arocha and Ortiz, 1958

Ixodes lasallei Mendez Arocha and Ortiz, 1958:198.

MATERIAL EXAMINED

APURE: 1 ♀ from *Agouti paca*, 4 km NW Nula, El Milagro, ? elev., 13.II.68, A. L. Tuttle.

FALCÓN: 1 ♀ from *Agouti paca*, 5 km N, 13 km E Mirimire, nr. La Pastora, 143 m elev., 23.XI.67, N. E. Peterson, et al.

T. F. AMAZONAS: 1 ♀ from *Agouti paca*, 84 km SSE Esmeralda, Boca Mavaca, 138 m elev., 8.III.67, M. D. Tuttle, F. L. Harder; 7 ♀♀ from 1 *Agouti paca*, 84 km SSE Esmeralda, 10 km up Río Mavaca from its mouth, 138 m elev., 16.III.67, M. D. Tuttle, F. L. Harder; 1 ♂ from *Agouti paca*, Rio Cunucunuma, Belén, 150 m elev., 20.I.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Dasyprocta fuliginosa*, as above, 23.I.67, M. D. Tuttle, F. L. Harder; 1 N from *Philander opossum*, as above, 29.I.67, M. D. Tuttle, F. L. Harder; 3 ♀♀ from 1 *Agouti paca*, 108 km SE Esmeralda, Río Mavaca, 140 m elev., 12.IV.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Felis pardalis*, 32 km SSE Puerto Ayacucho, Raya, 135 m elev., 17.X.67, A. L. Tuttle.

Ixodes probably *lasallei*

ARAGUA: 1 ♂ from *Oryzomys albigularis*, Rancho Grande Biological Station, 1050 m elev., 9.VIII.65, N. E. Peterson.

CARABOBO: 1 ♀, 5 NN from 1 *Dasyprocta aguti*, 1.7 km NNW Montalbán, Montero, 1091 m elev., 6.XI.67, A. L. Tuttle.

T. F. AMAZONAS: 3 NN from 1 *Myoprocta pratti*, 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 185 m elev., 16.II.66, A. L. and M. D. Tuttle.

DISTRIBUTION AND HOSTS

Mendez Arocha and Ortiz (1958) described *Ixodes lasallei* from the paca (*Agouti paca*) at Alto Orinoco, Territorio Federal Amazonas, Venezuela. Except for the three hosts mentioned above, all recorded collections of *I. lasallei* have been from *Agouti paca*.

I. lasallei is known only from Venezuela and Panama (Fairchild, et al., 1966).

Ixodes loricatus Neumann, 1899

Ixodes loricatus Neumann, 1899:139.

MATERIAL EXAMINED

ARAGUA: 2 NN, 1 L from 1 *Monodelphis brevicaudata*, Rancho Grande Biological Station, 1081 m elev., 7.VIII.65, N. E. Peterson, et al.

MIRANDA: 3 LL from 1 *Marmosa robinsoni*, 19 km E Caracas, Curapao, 1160 m elev., 7.X.66, N. E. Peterson, et al.

DISTRIBUTION AND HOSTS

The above specimens are only tentatively identified as *I. loricatus*. This species was first reported from Venezuela by Vogelsang and Cordero (1940) from *Didelphis* sp. in the Maracay Zoological Gardens, Aragua and at Naiguatá, Miranda.

It has been recorded off various species of *Didelphis*, *Marmosa* and *Ateles*. The distribution of *I. loricatus* also includes Mexico, Brazil, Paraguay, Uruguay, and Argentina.

Ixodes luciae Senevet, 1940

Ixodes luciae Senevet, 1940:896.

Ixodes loricatus var. *spinosus* Nuttall, 1910.

Ixodes scuticrenatus Vasques, 1946.

Ixodes loricatus vogelsangi Dias, 1954.

MATERIAL EXAMINED

ARAGUA: 1 N, 1 L from 1 *Monodelphis brevicaudata*, Rancho Grande Biological Station, 14 km N, 14 km W Maracay, 1100 m elev., 22.IV.67, N. E. Peterson, et al.

Barinas: 1 N, 2 LL from 1 *Monodelphis brevicaudata*, 5 km SW Altamira, El Filo, ? elev., 19.XII.67, A. L. Tuttle; 1 ♂ from *Didelphis marsupialis*, Altamira, ? elev., 19.XII.67, A. L. Tuttle; 1 N from *Monodelphis brevicaudata*, Altamira, El Filo, ? elev., 20.XII.67, A. L. Tuttle; 2 NN from 2 *Monodelphis brevicaudata*, 0.5 km SW Altamira, La Quinta, ? elev., 20-25.XII.67, A. L. Tuttle.

Carabobo: 1 N, 35+ LL from 2 *Monodelphis brevicaudata*, 4.5 km SE Montalbán, Sabana Aguirre, 1055 m elev., 3-4.XI.67, A. L. Tuttle; 1 N, 5 LL from 1 *Monodelphis brevicaudata*, 1 km E Montalbán, Sanjou, 1091 m elev., 6.XI.67, A. L. Tuttle; 2 NN from 1 *Marmosa robinsoni*, 1 km SE Montalbán, El Merey, 1091 m elev., 8.XI.67, A. L. Tuttle; 1 N from *Monodelphis brevicaudata*, as above, 8.XI.67, A. L. Tuttle; 1 N, 4 LL from 1 *Sigmodon hispidus*, 1 km S Montalbán, Hato Larao, 1091 m elev., 22,24.XI.67, A. L. Tuttle; 1 N, 3 LL from 1 *Monodelphis brevicaudata*, as above, 24.XI.67, A. L. Tuttle; 2 ♀♀ from 1 *Didelphis marsupialis*, 3 km SW Montalbán, Hacienda La Canada, 1091 m elev., 24.XI.67, A. L. Tuttle; 1 L from *Marmosa robinsoni*, 2.5 km Montalbán, El Castano, 1072 m elev., 8.XI.67, A. L. Tuttle; 1 N from *Zygodontomys brevicauda*, Montalbán, Potrerito, 1091 m elev., 8.XI.67, A. L. Tuttle.

Dto. Federal: 1 ♂ from *Didelphis marsupialis*, 5 km S, 25 km W Caracas, Alto Não Leon, 1880 m elev., 25.V.67, N. E. Peterson, et al.

Falcón: 6 ♂♂, 4 ♀♀ from 3 *Didelphis marsupialis*, 5 km N, 13 km E Mirimire, nr. La Pastora, 130-140 m elev., 21,30.XI.67, N. E. Peterson, et al.; 4 NN, 1 L from 2 *Monodelphis brevicaudata*, as above except 122 m and 145 m elev., 13,18.XI.67, N. E. Peterson, et al.

Guárico: 4 ♂♂, 1 ♀ from 4 *Didelphis marsupialis*, 50 km S, 39 km E Caracas, nr. Guatopo Nat'l Park, 680 m elev., 22-25.IX.66, N. E. Peterson, et al.

Miranda: 3 LL from 1 *Oryzomys concolor*, 19 km E Caracas, Curapao, 1160 m elev., 9.X.66, N. E. Peterson, et al.; 3 NN from 1 *Marmosa cinerea*, as above, 1150 m elev., 14.X.66, N. E. Peterson, et al.; 1 N from *Monodelphis brevicaudata*, 6 km S Rio Chico, Hacienda La Guapa, 1 m elev., 8.XI.66, N. E. Peterson, et al.

T. F. Amazonas: 3 ♀♀ from 1 opossum, Tamatama, Rio Orinoco, 135 m elev., 3.V.67, M. D. Tuttle, F. L. Harder; 1 ♀, 1 N from 1 *Marmosa robinsoni*, as above, 15.V.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Philander opossum*, as above, 3.V.67, M. D. Tuttle, F. L. Harder; 5 ♀♀ from 2 *Philander opossum*, as above, 9,21.V.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Philander opossum*, 0.5 km from Capibara, NE side Casiquiare, 130 m elev., 9.VI.67, M. D. Tuttle, F. L. Harder; 1 ♀ from *Philander opossum*, 84 km SSE Esmeralda, Boca Mavaca, 138 m elev., 8.III.67, M. D. Tuttle, F. L. Harder; 3 NN from 1 *Oryzomys concolor*, Tamatama, Río Orinoco, 135 m elev., 21.V.67, M. D. Tuttle, F. L. Harder.

Yaracuy *and* Carabobo: 1 ♂ from *Didelphis marsupialis*, about 10 km NW Urama, 25 m elev., 8.III.66, A. L. and M. D. Tuttle; 1 N from *Marmosa cinerea*, 19 km NW Urama, Km 40, 5-25 m elev., 19.X.65, A. L. and M. D. Tuttle.

Yaracuy: 14 ♂♂, 3 ♀♀ from 2 *Didelphis marsupialis*, 8 km N, 18 km W San Felipe, Minas de Aroa, 395 m elev., 13.XII.67, N. E. Peterson, et al.

Zulia: 1 N from *Monodelphis brevicaudata*, Kasmera, nr. Sierra de Perijá, 10 km S, 18 km W Machiques, 270 m elev., 20.IV.68, N. E. Peterson, J. Matson.

Ixodes probably *luciae*

Aragua: 1 L from *Oryzomys albigularis*, Rancho Grande Biological Station, 1050 m elev., 11.VIII.65, N. E. Peterson.

Dto. Federal: 15 LL from 1 *Oryzomys capito*, 3 km S, 46 km W Caracas, nr. El Limón, 398 m elev., 19.VIII.66, N. E. Peterson; 3 LL from 1 *Monodelphis brevicaudata*, as above, 20.VIII.66, N. E. Peterson.

Falcón: 2 ♂♂ from 1 *Didelphis marsupialis*, nr. Mirimire, ca. 250 m elev., 15.IX.67, N. E. Peterson, et al.; 2 NN, 5 LL from 2 *Monodelphis brevicaudata*, 4 km N, 13 km E Mirimire, nr. La Pastora, 90-125 m elev., 13,27.XI.67, N. E. Peterson, et al.; 1 N from *Monodelphis brevicaudata*, as above except 15 km E, 130 m elev., 29.XI.67, N. E. Peterson, et al.

Guárico: 2 LL from 1 *Monodelphis brevicaudata*, 50 km S, 3 km E Caracas, nr. Guatopo, Nat'l Park, 680 m elev., 24.IX.66, N. E. Peterson, et al.

Mérida: 2 LL from 1 *Cryptotis thomasi*, 5.5 km E, 2 km S Tabay, nr. middle Refugio, 2630 m elev., 16.IV.66, N. E. Peterson.

Miranda: 1 L from *Oryzomys fulveseens*, 19 km E Caracas, Curapao, 1160 m elev., 13.X.66, N. E. Peterson, et al.; 1 L from *Marmosa robinsoni*, 8 km S Caracas, nr. Turgua, 1144 m elev., 10.VIII.66, N. E. Peterson, et al.

T. F. Amazonas: 4 LL from 1 *Marmosa murina*, Río Cunucunuma, Belén, 150 m elev., 14.II.67, M. D. Tuttle, F. L. Harder; 1 L from *Caluromys philander*, as above, 21.XII.66, M. D. Tuttle, F. L. Harder; 4 LL from 1 *Oryzomys concolor*, 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 19.III.67, M. D. Tuttle, F. L. Harder; 1 L from *Proechimys semispinosus*, 84 km SSE Esmeralda, Río Mavaca, about 20 mi. above mouth, 138 m elev., 20.III.67, M. D. Tuttle, F. L. Harder.

Trujillo: 1 L from *Marmosa robinsoni*, 10 km WNW Valera, nr. Isnotu, 930 m elev., 30.VIII.65, N. E. Peterson.

Yaracuy: 1 N, 1 L from 1 *Oryzomys capito*, 8 km N, 18 km W San Felipe, Minas de Aroa, 400 m elev., 23.XII.67, N. E. Peterson, et al.

Distribution and Hosts

As reported by Fairchild, et al., (1966) and supported by the above collection data, opossums are preferred hosts of *I. luciae* adults and rodents are favored by immature stages.

Mendez Arocha and Ortiz (1958) first recorded *I. luciae* from Venezuela. In addition to Venezuela this species has been recorded from Mexico, British Honduras, Guatemala, Colombia, Peru, French Guiana, Brazil, Argentina, Trinidad (Fairchild, et al., 1966), and Bolivia (Fonseca, 1960). The RML collection contains unpublished records from Nicaragua and Surinam.

Ixodes (Ixodes) venezuelensis Kohls, 1953

Ixodes venezuelensis Kohls, 1953:300.

Material Examined

Apure: 2 NN from 2 *Proechimys semispinosus*, 3 km N Nula, San Camilo, Nulita, 24 m elev., 22,31.I.68, A. L. Tuttle; 2 NN as above, from 1 *Proechimys semispinosus*, 28.I.68, A. L. Tuttle.

BARINAS: 6 NN, 4 LL from 2 *Monodelphis brevicaudata,* Altamira, El Filo, ? elev., 19.XII.67, A. L. Tuttle; 3 NN from 1 *Proechimys semispinosus,* Altamira, ? elev., 23.XII.67, A. L. Tuttle; 1 N from *Proechimys semispinosus,* 0.5 km SW Altamira, La Quinta, ? elev., 24.XII.67, A. L. Tuttle; 2 LL from 1 *Monodelphis brevicaudata,* as above, 25.XII.67, A. L. Tuttle; 6 NN from 3 *Proechimys semispinosus,* Altamira, 29.XII and 5.I.68, A. L. Tuttle.

BOLÍVAR: 1 N from *Proechimys guyannensis,* 59 km SE El Dorado, Km 74, El Manaco, 150 m elev., 12.VI.66, A. L. and M. D. Tuttle; 1 N from *Proechimys guyannensis,* 45 km NE Icabarú, Santa Lucía de Surukun, 851 m elev., 7.V.68, A. L. Tuttle.

CARABOBO: 7 NN, 1 L from 1 *Dasyprocta aguti,* Montalbán, Potrerito, 1091 elev., 7.XI.67, A. L. Tuttle; 13 NN from 1 *Dasyprocta aguti,* 1.7 km NNW Montalbán, Montero, 1091 m elev., 12.XI.67, A. L. Tuttle.

DTO. FEDERAL: 1 ♀ from *Oryzomys albigularis,* 5 km NNE Caracas, 2095 m elev., 24.VIII.65, A. L. and M. D. Tuttle.

MÉRIDA: 2 LL from 1 *Oryzomys minutus,* 4 km E Tabay, La Mucuy, 2127 m elev., 10.III.66, N. E. Peterson.

MIRANDA: 1 ♀ from *Heteromys anomalus,* 8 km S Caracas, nr. Turgua, 1144 m elev., 10.VIII.66, N. E. Peterson.

T. F. AMAZONAS: 1 N from *Didelphis marsupialis,* 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 17.III.67, M. D. Tuttle, F. L. Harder; 1 N from *Proechimys guyannensis,* Río Cunucunuma, Belén, 150 m elev., 3.I.67, M. D. Tuttle, F. L. Harder; 1 N from *Sciurus igniventris,* 84 km SSE Esmeralda, SW side of Río Mavaca, 138 m elev., 5.III.67, M. D. Tuttle, F. L. Harder; 1 N, 8 LL from 1 *Didelphis marsupialis,* 84 km SSE Esmeralda, Boca Mavaca, Río Orinoco, 138 m elev., 16.III.67, M. D. Tuttle, F. L. Harder; 5 LL from 1 *Philander opossum,* Río Cunucunuma Area, nr. Belén, 150 m elev., 19.I.67, M. D. Tuttle, F. L. Harder; 4 NN from 1 *Myoprocta pratti,* 108 km SSE Esmeralda, Río Mavaca, 140 m elev., 13.IV.67, M. D. Tuttle, F. L. Harder; 1 N, 1 L from 2 *Proechimys* sp., Casiquiare Canal, Capibara, 130 m elev., 29.V and 1.V.67, M. D. Tuttle, F. L. Harder; 1 L from *Philander opossum,* as above, 2.VI.67, M. D. Tuttle, F. L. Harder; 1 N, from *Philander opossum,* Río Cunucunuma, Belén, 150 m elev., 20.I.67, M. D. Tuttle, F. L. Harder; 1 N from *Proechimys guyannensis,* 25 km SSE Puerto Ayacucho, Paría, 114 m elev., 20.IX.67, A. L. Tuttle.

TRUJILLO: 1 ♀, 14 NN, 61+ LL from 2 *Monodelphis brevicaudata,* 10 km WNW Valera, nr. Isnotu, 900 m elev., 28-30.VIII.65, N. E. Peterson; 1 N from *Heteromys anomalus,* as above, 930 m elev., 30.VIII.65, N. E. Peterson; 2 LL from 2 *Oryzomys albigularis,* 14 km E Trujillo, Hda. Misisí, 2225-2360 m elev., 19, 21.I.66, N. E. Peterson; 1 N, 1 L from 2 *Oryzomys minutus,* as above, 2260-2360 m elev., 22,28.I.66, N. E. Peterson; 4 ♀♀, 19 NN, 10+ LL from 1 *Monodelphis brevicaudata,* 10 km WNW Valera, nr. Isnotu, 930 m elev., 27.VIII.65, N. E. Peterson.

Ixodes probably *venezuelensis*

ARAGUA: 1 L from *Oryzomys albigularis,* Rancho Grande Biological Station, 1050 m elev., 10.VIII.65, N. E. Peterson.

TRUJILLO: 1 L from *Marmosa dryas,* 15 km E, Trujillo, Hda. Misisí, 2360 m elev., 22.I.66, N. E. Peterson.

DISTRIBUTION AND HOSTS

In addition to the host information given above, females (the male is unknown) of *I. venezuelensis* are also known from *Nectomys* (Kohls, 1953), *Mus* sp. (Vogelsang and Santos Dias, 1953*b*), and *Zygodontomys* sp. (Fairchild et al., 1966). All known hosts for the immature stages are listed above.

Kohls (1953) described *I. venezuelensis* from material collected at Rancho Grande Biological Station and at Campamento Rafael Rangel, Sierra Maestra, Aragua, Venezuela. It also occurs in Colombia and Panama.

Ixodes spp.

MATERIAL EXAMINED

APURE: 2 NN were found on *Dasyprocta* sp.

ARAGUA: 3 NN, 10 LL were found on *Monodelphis brevicaudata* and *Oryzomys albigularis.*

BARINAS: 1 L was found on *Sigmodon hispidus.*

BOLÍVAR: 4 LL were found on the following hosts: *Marmosa murina, Nasua nasua,* and *Sturnira lilium.*

CARABOBO: 1 L was found on *Sigmodon hispidus.*

DTO. FEDERAL: 1 L was found on *Oryzomys albigularis.*

FALCÓN: 3 NN, 7 LL were found on the following hosts: *Artibeus jamaicensis, Marmosa robinsoni, Monodelphis brevicaudata, Proechimys semispinosus.*

MÉRIDA: 18 NN, 96 LL were found on the following hosts, *Cryptotis thomasi, Marmosa murina, M. dryas, Oryzomys albigularis, O. minutus, O.* sp., *Rhipidomys venustus, Thomasomys laniger,* and *T. lugens.*

MIRANDA: 1 L was found on *Artibeus jamaicensis.*

SUCRE: 1 N was found on *Desmodus rotundus.*

TÁCHIRA: 2 NN, 46 LL were found on the following hosts: bird, *Oryzomys minutus, Proechimys semispinosus, Rhipidomys venustus, Thomasomys aureus,* and *T. hylophilus.*

T. F. AMAZONAS: 6 NN, 13 LL were found on the following hosts: *Didelphis marsupialis, Philander opossum, Proechimys guyannensis,* and *Sciurus igniventris.*

YARACUY: 9 LL were found on *Monodelphis brevicaudata* and *Oryzomys capito.*

ZULIA: 1 L was found on *Proechimys semispinosus.*

Genus *Rhipicephalus* Koch, 1844

Rhipicephalus sanguineus (Latreille, 1806)

Ixodes sanguineus Latreille, 1806:157.

The systematic status of the species in the *R. sanguineus* complex is in a state of flux and any attempt at a complete synonymy would be unwarranted at this time. Commendable attempts at sorting out the synonymy of species in this group have been undertaken by Zumpt (1950) and Morel and Vassiliades (1963).

No specimens of *Rhipicephalus sanguineus* from Venezuela were available for study.

Distribution and Hosts

Rhipicephalus sanguineus was first recorded in Venezuela by Vogelsang (1936) and has been cited since that time by Vogelsang and Cordero (1940) and Vogelsang and Santos Dias (1953*a*). This species is probably the most widely distributed of any tick in the world. It is a common parasite of dogs throughout its range and attacks a variety of other hosts (Hoogstraal, 1956).

Doubtful Records

Argas persicus (Oken, 1818). Vogelsang and Cordero (1940) reported this species from Venezuela. However, many of the reports in the literature of the presence of *A. persicus* in South America have turned out to be *A. miniatus*. Confirmation of the presence of *A. persicus* in Venezuela must await the availability of material for examination, preferably reared larvae.

Argas reflexus (Fabricius, 1794). This species was reported from a zoological garden in Venezuela by Vogelsang and Cordero (1940). It is found only in Europe and the Middle East. Records of its presence in Venezuela are most likely the result of misidentification.

Ornithodoros turicata (Dugès, 1876). Neumann (1911) reported *O. turicata* from Venezuela. However, since there have been no further collections of this species from South America the record remains doubtful.

Amblyomma americanum (Linnaeus, 1778). According to Diaz-Ungria (1957), Rivas (1919) encountered this species in Venezuela. We were unable to obtain the paper by Rivas and we can find no evidence to substantiate its occurrence there.

Amblyomma exopithalmum Mendez Arocha and Ortiz, 1958. This species was described from a single female specimen, without a capitulum, from a dog in Venezuela. It has not been recorded again and we consider this species as doubtful until validated by study of additional material.

Amblyomma testudinis (Conil, 1877). The only report of this species in Venezuela is that of Vogelsang and Cordero (1940) from *Testudo tabulata* in captivity in the Maracay Zoological Garden. We have no evidence that this species is established in Venezuela.

Ixodes brunneus Koch, 1844. Cooley and Kohls (1945) record a single female off *Ramphastos variegatus*, coll. R. Matheson. This record was also cited by Mendez Arocha and Ortiz (1958). To our knowledge this is the only time *I. brunneus* has been collected in Venezuela and we doubt that it is established there.

Rhipicephalus bursa Canestrini and Fanzago, 1877. Diaz-Ungria (1957) stated that Rivas (1919) reported *R. bursa* in Venezuela and indicated it was probably imported on cattle. Vogelsang and Santos Dias (1953*a*) cite the Rivas record and discuss the possibility of the occurrence of this Palaearctic species in South America. Since it has never been collected again we can only conclude that either Rivas's identification was incorrect or *R. bursa* was introduced on imported animals and did not become established.

HOST-PARASITE LIST

(N = nymph; L = larva)

Class AMPHIBIA

Bufo sp.
  Amblyomma dissimile Koch ♂
toad
  Amblyomma dissimile Koch ♂, ♀, N
  Amblyomma sp. NN

Class REPTILIA

Order SAURIA

Ameiva sp.
  Amblyomma sp. NN, LL
Iguana sp.
  Ornithodoros puertoricensis Fox LL
  Amblyomma dissimile Koch ♂, ♀, N
  Amblyomma spp. NN, LL
lizards
  Ornithodoros puertoricensis Fox LL
  Ornithodoros spp. LL
  Amblyomma dissimile Koch ♂, ♀, N, L
  Amblyomma sp. NN, LL
"squamata"
  Amblyomma dissimile Koch ♀, N, L
  Amblyomma sp. N, L

Order SERPENTES

Boa constrictor
  Amblyomma dissimile Koch ♂, ♀, N
Boa sp.
  Amblyomma dissimile Koch, ♂, ♀, N
rattlesnake
  Amblyomma dissimile Koch ♂
snake
  Amblyomma dissimile Koch, ♂, ♀, N, L
  Amblyomma sp. L

Class AVES

Order PASSERIFORMES

Family Rhinocryptidae

Scytalopus sp.
Ixodes auritulus group L

"bird"
Ornithodoros rudis group L
Amblyomma sp. N, L
Ixodes auritulus group L
Ixodes sp. L

Class MAMMALIA

Order MARSUPIALIA

Family Caenolestidae

Caenolestes obscurus
Ixodes (*E.*) *jonesae* Kohls, Sonenshine and Clifford L

Family Didelphidae

Caluromys philander
Ixodes luciae group L
Chironectes minimus
Amblyomma sp. L
Didelphis azarae
Amblyomma sp. N
Ixodes sp. L
Didelphis marsupialis
Ornithodoros talaje (Guérin-Meneville) L
Amblyomma extraoculatum Neumann ♂
Amblyomma sp. N, L
Ixodes luciae Senevet ♂, ♀, N
Ixodes luciae group ♂
Ixodes venezuelensis Kohls N, L
Ixodes, sp. N
Lutreolina crassicaudata
Amblyomma sp. N, L
Marmosa cinerea
Amblyomma sp. L
Ixodes luciae Senevet N
Marmosa dryas
Ixodes probably *venezuelensis* L
Ixodes sp. N, L
Marmosa fuscata
Ixodes sp. L
Marmosa murina
Amblyomma sp. L
Ixodes luciae Senevet N
Ixodes luciae group L
Ixodes sp. L
Marmosa robinsoni
Ornithodoros marmosae Jones and Clifford, L
Ornithodoros puertoricensis Fox L
Ornithodoros sp. L
Amblyomma sp. N, L
Ixodes near *loricatus* L
Ixodes luciae group N, L
Ixodes, sp. L
Marmosa sp.
Ornithodoros puertoricensis Fox L
Ornithodoros, sp. L
Metachirus nudicaudatus
Amblyomma sp. N, L
Monodelphis brevicaudata
Ornithodoros puertoricensis Fox L
Amblyomma sp. N, L
Ixodes near *loricatus* N, L
Ixodes luciae Senevet N, L
Ixodes luciae group N, L
Ixodes venezuelensis Kohls ♀, N, L
Ixodes sp. N, L
Philander opossum
Amblyomma sp. N, L
Ixodes lasallei Mendez Arocha and Ortiz N
Ixodes luciae Senevet ♀
Ixodes venezuelensis Kohls N, L
Ixodes sp. N, L
"Opossum"
Ixodes luciae Senevet ♀, N

Order INSECTIVORA

Family Soricidae

Cryptotis thomasi
Ixodes luciae group L
Ixodes sp. N, L

Order CHIROPTERA

Family Desmodidae

Desmodus rotundus
Ornithodoros azteci Matheson, L
Ornithodoros hasei group L
Ornithodoros rossi Kohls, Sonenshine and Clifford, L
Ornithodoros yumatensis Cooley and Kohls, L
Ornithodoros yumatensis or near L
Ornithodoros sp. L
Amblyomma sp. L
Ixodes sp. N
Diphylla ecaudata
Ornithodoros yumatensis Cooley and Kohls, L
Ornithodoros sp. L

Family Emballonuridae

Peropteryx kappleri
Ornithodoros azteci Matheson, L
Ornithodoros yumatensis Cooley and Kohls, L
Peropteryx macrotis
Ornithodoros azteci Matheson, L
Ornithodoros probably *azteci* L
Ornithodoros rossi Kohls, Sonenshine and Clifford, L
Ornithodoros yumatensis or near, L
Ornithodoros sp. L
Peropteryx trinitatis
Ornithodoros rossi or near L
Ornithodoros yumatensis or near L
Ornithodoros sp. L
Peropteryx sp.
Ornithodoros hasei (Schulze) L
Saccopteryx bilineata
Ornithodoros sp. L

Family Molossidae

Molossops planirostris
Ornithodoros boliviensis Kohls and Clifford L
Ornithodoros probably *boliviensis* L
Amblyomma sp. N
Molossus ater
Ornithodoros boliviensis Kohls and Clifford L
Ornithodoros probably *boliviensis* L
Ornithodoros hasei (Schulze) ♂, ♀, L
Ornithodoros sp. L
Amblyomma sp. L
Molossus bondae
Ornithodoros boliviensis Kohls and Clifford L
Ornithodoros hasei (Schulze) L
Molossus obscurus
Ornithodoros hasei (Schulze) L

Neoplatymops mattogrossensis
Ornithodoros hasei (Schulze) L
Ornithodoros sp. L
Tadarida gracilis
Ornithodoros hasei (Schulze) L
Ornithodoros setosus Kohls, Clifford and Jones L
Ornithodoros stageri Cooley and Kohls L
Ornithodoros talaje group ♀
Ornithodoros sp. L

Family Phyllostomidae

Artibeus jamaicensis
Ornithodoros azteci Matheson L
Ornithodoros hasei (Schulze) L
Amblyomma sp. N, L
Ixodes sp. L
Artibeus lituratus
Ornithodoros puertoricensis Fox L
Amblyomma longirostre (Koch) N
Amblyomma sp. L
Artibeus sp. D.
Ornithodoros azteci Matheson L
Carollia brevicauda
Amblyomma parvum Aragão ♀
Amblyomma sp. N
Carollia perspicillata
Ornithodoros azteci Matheson L
Ornithodoros probably *azteci* L
Ornithodoros brodyi Matheson L
Ornithodoros hasei (Schulze) L
Ornithodoros yumatensis Cooley and Kohls L
Amblyomma sp. N, L
Boophilus microplus (Canestrini) ♂, ♀, N (questionable host)
Haemaphysalis juxtakochi Cooley ♂, ♀ (questionable host)
Carollia sp.
Ornithodoros azteci Matheson L
Ornithodoros brodyi Matheson L
Ornithodoros hasei (Schulze) L
Chiroderma salvini
Ornithodoros hasei (Schulze) L
Chiroderma villosum
Amblyomma sp. L
Choeroniscus minor
Amblyomma cajennense (Fabricius) ♂, ♀ (questionable host)
Amblyomma rotundatum Koch ♀ (questionable host)
Amblyomma sp. N, L
Glossophaga longirostris
Ornithodoros azteci Matheson L
Ornithodoros hasei (Schulze) L
Ornithodoros rossi Kohls, Sonenshine and Clifford L
Amblyomma sp. L
Glossophaga soricina
Ornithodoros azteci Matheson L
Amblyomma sp. L
Leptonycteris curasoae
Antricola sp. N
Ornithodoros sp. L
Lonchorhina aurita
Ornithodoros azteci Matheson L
Ornithodoros brodyi Matheson L
Ornithodoros hasei (Schulze) L
Lonchorhina orinocensis
Ornithodoros hasei (Schulze) L
Ornithodoros rossi Kohls, Sonenshine and Clifford L
Ornithodoros sp. L
Macrophyllum macrophyllum
Ornithodoros azteci Matheson L
Amblyomma calcaratum Neumann ♂ (questionable host)
Mimon crenulatum
Ornithodoros probably *boliviensis* Kohls and Clifford L
Ornithodoros hasei (Schulze) L
Mormoops megalophylla
Antricola silvai Cěrný ♂, ♀, N, L
Ornithodoros hasei (Schulze) L
Ornithodoros viguerasi Cooley and Kohls L
Phyllostomus hastatus
Ornithodoros azteci Matheson L
Ornithodoros hasei (Schulze) L
Pteronotus davyi
Antricola silvai Cěrný L
Antricola sp. N, L
Ornithodoros viguerasi Cooley and Kohls L
Ornithodoros sp. L
Pteronotus parnellii
Ornithodoros hasei (Schulze) L
Ornithodoros sp. L
Amblyomma sp. N, L
Pteronotus psilotis
Antricola silvai Cěrný L
Ornithodoros marinkellei Kohls, Clifford and Jones L
Pteronotus suapurensis
Ornithodoros viguerasi Cooley and Kohls L
Sturnira bogotensis
Ixodes sp. N
Sturnira lilium
Ornithodoros hasei (Schulze) L
Ornithodoros sp. L
Boophilus microplus (Canestrini) L (questionable host)
Ixodes sp. L
Sturnira ludovici
Ornithodoros hasei (Schulze) L
Ixodes sp. N
Sturnira tildae
Amblyomma sp. N
Trachops cirrhosus
Ornithodoros azteci Matheson L
Ornithodoros sp. L
Uroderma bilobatum
Amblyomma sp. L
Uroderma magnirostrum
Ornithodoros hasei (Schulze) L
Vampyrops oratus
Amblyomma calcaratum Neumann ♂
Ixodes luciae Senevet N, L (questionable host)
Vampyrops helleri
Amblyomma sp. L

Family Noctilionidae

Noctilio labialis
Ornithodoros hasei (Schulze) ♂, ♀, N, L
Amblyomma sp. N, L
Noctilio leporinus
Ornithodoros boliviensis Kohls and Clifford L
Ornithodoros hasei (Schulze) L
Ornithodoros tiptoni Jones and Clifford L
Ornithodoros sp. L

Family Vespertilionidae

Eptesicus brasiliensis
Ornithodoros boliviensis Kohls and Clifford L
Amblyomma sp. L
Eptesicus montosus
Ornithodoros eptesicus Kohls, Clifford and Jones L

Amblyomma sp. L
Myotis albescens
Ornithodoros hasei (Schulze) L
Ornithodoros sp. L
Myotis keaysi
Amblyomma sp. N, L
Myotis nigricans
Ornithodoros sp. N, L
Rhogeëssa minutilla
Ornithodoros hasei (Schulze) L
Rhogeëssa tumida
Ornithodoros hasei (Schulze) L

Order PRIMATES

Family Cebidae
Alouatta seniculus
Amblyomma cajennense (Fabricius) ♀
Amblyomma sp. N
Aotus trivirgatus
Amblyomma sp. N
Callicebus torquatus
Amblyomma sp. N, L
Cebus albifrons
Amblyomma sp. N, L
Cebus nigrivittatus
Amblyomma sp. N
Haemaphysalis juxtakochi Cooley ♂
Chiropotes satanas
Amblyomma sp. N, L
Pithecia pithecia
Amblyomma sp. N, L

Family Hominidae
Homo sapiens
Amblyomma cajennense (Fabricius) ♂
Amblyomma oblongoguttatum Koch ♂
Amblyomma ovale Koch ♂, ♀
Amblyomma sp. N, L
Haemaphysalis juxtakochi Cooley N

Order EDENTATA

Family Bradypodidae
Bradypus infuscatus
Amblyomma varium Koch ♂, ♀
Amblyomma sp. L

Family Dasypodidae
Dasypus novemcinctus
Amblyomma auricularium (Conil) ♂, ♀, N, L
Amblyomma beaurepairei Vogelsang and Santos Dias ♂, ♀
Amblyomma cajennense (Fabricius) ♂
Amblyomma sp. N
Dasypus sabanicola
Amblyomma auricularium (Conil) ♂, ♀
Dasypus sp.
Amblyomma sp. N
Priodontes maximus
Amblyomma cajennense (Fabricius) ♀

Family Myrmecophagidae
Myrmecophaga tridactyla
Amblyomma cajennense (Fabricius) ♂, ♀
Amblyomma calcaratum Neumann ♂
Amblyomma nodosum Neumann ♂
Amblyomma scalpturatum Neumann ♂
Amblyomma sp. N
Tamandua longicaudata
Ornithodoros puertoricensis Fox L
Amblyomma auricularium (Conil) ♂, ♀
Amblyomma cajennense (Fabricius) ♂, ♀, N
Amblyomma calcaratum Neumann ♂, ♀
Amblyomma nodosum Neumann ♂, ♀
Amblyomma sp. N, L
Tamandua tetradactyla
Amblyomma calcaratum Neumann ♂
Amblyomma pacae Aragão ♂
Amblyomma sp. N, L

Order LAGOMORPHA

Family Leporidae
Sylvilagus brasiliensis
Amblyomma sp. N, L
Sylvilagus floridanus
Ornithodoros puertoricensis Fox L
Ornithodoros nr. *puertoricensis* L
Amblyomma parvum Aragão ♂, ♀, N, L
Amblyomma sp. N, L
Haemaphysalis juxtakochi Cooley ♀
Haemaphysalis leporispalustris (Packard) ♂, ♀, N, L

Order RODENTIA

Family Cricetidae
Akodon urichi
Ornithodoros hasei (Schulze) L
Amblyomma sp. N, L
Holochilus brasiliensis
Amblyomma ovale Koch N
Amblyomma sp. L
Nectomys squamipes
Amblyomma sp. L
Neacomys tenuipes
Amblyomma sp. L
Oryzomys albigularis
Ornithodoros sp. L
Ixodes auritulus group L
Ixodes probably *lasallei* ♂
Ixodes luciae group L
Ixodes venezuelensis Kohls ♀, L
Ixodes probably *venezuelensis* L
Ixodes sp. N, L
Oryzomys bicolor
Amblyomma sp. N, L
Oryzomys capito
Ixodes luciae group N, L
Ixodes sp. L
Amblyomma sp. L
Oryzomys concolor
Ornithodoros marmosae Jones and Clifford L
Amblyomma probably *ovale* N
Amblyomma sp. N, L
Ixodes luciae Senevet N, L
Ixodes luciae group L
Oryzomys fulvescens
Amblyomma tigrinum Koch ♂, ♀, N
Amblyomma sp. L
Ixodes luciae group L
Oryzomys minutus
Ixodes auritulus group L
Ixodes (*E.*) *jonesae* Kohls, Sonenshine and Clifford ♀, L
Ixodes venezuelensis Kohls L
Ixodes sp. N, L
Oryzomys sp.
Amblyomma sp. N, L
Ixodes luciae Senevet N
Ixodes luciae group N, L
Ixodes sp. N, L

Rhipidomys macconnelli
Amblyomma sp. L
Rhipidomys venezuelae
Ornithodoros sp. L
Rhipidomys venustus
Ixodes sp. L
Sigmonys alstoni
Ornithodoros puertoricensis Fox L
Amblyomma sp. N
Sigmodon hispidus
Amblyomma cajennense (Fabricius) ♂, ♀
Amblyomma sp. L
Ixodes luciae Senevet, N, L
Ixodes sp. L
Sigmodon sp.
Amblyomma sp. N, L
Thomasomys aureus
Ixodes sp. N, L
Thomasomys hylophilus
Ixodes sp. L
Thomasomys laniger
Ixodes (*E.*) *jonesae* Kohls, Sonenshine and Clifford ♂, ♀, N, L
Ixodes sp. L
Thomasomys lugens
Ixodes auritulus group L
Ixodes sp. L
Zygodontomys brevicauda
Ornithodoros aztecı Matheson L
Ornithodoros puertoricensis Fox L
Ornithodoros talaje (Guerin-Meneville) L
Ornithodoros talaje group L
Ornithodoros sp. N, L
Amblyomma ovale Koch N
Amblyomma probably *ovale* L
Amblyomma sp. N, L
Ixodes luciae Senevet N

Family Dasyproctidae
Agouti paca
Ornithodoros tuttlei Jones and Clifford L
Amblyomma naponense (Packard) ♂
Amblyomma pacae Aragão ♂, ♀, N
Amblyomma sp. N, L
Ixodes lassallei Mendez Arocha and Ortiz ♂, ♀
Dasyprocta aguti
Amblyomma cajennense (Fabricius) ♀
Amblyomma probably *cajennense* N, L
Amblyomma sp. N, L
Haemaphysalis juxtakochi Cooley N, L
Ixodes probably *lasallei* ♀, N
Ixodes venezuelensis Kohls N, L
Dasyprocta fuliginosa
Ornithodoros puertoricensis Fox L
Amblyomma sp. N, L
Haemaphysalis juxtakochi Cooley N, L
Haemaphysalis sp. N
Ixodes lasallei Mendez Arocha and Ortiz ♀
Dasyprocta variegata
Amblyomma sp. N
Dasyprocta sp.
Amblyomma cajennense (Fabricius) ♀
Amblyomma sp. N
Haemaphysalis juxtakochi Cooley N, L
Ixodes venezuelensis Kohls N, L
Ixodes sp. N
Myoprocta pratti
Amblyomma sp. L
Ixodes probably *lasallei* N
Ixodes venezuelensis Kohls N

Family Echimyidae
Echimys armatus
Amblyomma sp. N, L
Echimys semivillosus
Ornithodoros echimys Kohls, Clifford and Jones L
Ornithodoros talaje (Guerin-Menevllle) L
Amblyomma sp. L
Echimys sp.
Amblyomma sp. N
Isothrix bistriata
Amblyomma sp. N
Proechimys canicollis
Amblyomma ovale Koch N, L
Amblyomma sp. N, L
Proechimys guyannensis
Ornithodoros puertoricensis Fox L
Ornithodoros sp. L
Amblyomma ovale Koch N, L
Amblyomma sp. N, L
Ixodes luciae group L
Ixodes venezuelensis Kohls N
Ixodes sp. N, L
Proechimys hoplomyoides
Amblyomma sp. L
Proechimys semispinosus
Ornithodoros puertoricensis Fox L
Ornithodoros sp. L
Amblyomma dissimile Koch ♂, N, L
Amblyomma ovale Koch N
Amblyomma pacae Aragão N
Amblyomma sp. N, L
Ixodes luciae group L
Ixodes venezuelensis Kohls N, L
Ixodes sp. N, L

Family Erethizontidae
Coendou prehensilis
Amblyomma longirostre (Koch) ♂, ♀
Amblyomma sp. L

Family Heteromyidae
Heteromys anomalus
Amblyomma ovale Koch N
Amblyomma sp. N, L
Ixodes venezuelensis Kohls ♀, N

Family Hydrochaeridae
Hydrochaeris hydrochoeris
Amblyomma cajennense (Fabricius) ♂, ♀
Amblyomma probably *cajennense* ♂, ♀
Amblyomma coelebs Neumann, ♀
Amblyomma extraoculatum Neumann ♂, ♀, N, L
Amblyomma probably *extraoculatum* L
Amblyomma oblongoguttatum Koch ♀
Amblyomma tigrinum Koch ♂
Amblyomma sp. N, L

Family Muridae
Rattus rattus
Amblyomma sp. L
"mouse"
Amblyomma sp. N

Family Sciuridae
Sciurus aestuans
Haemaphysalis juxtakochi Cooley N
Sciurus gilvigularis
Amblyomma sp. L

Sciurus granatensis
Amblyomma longirostre (Koch) N, L
Amblyomma probably *longirostre* L
Amblyomma sp. N, L
Sciurus igniventris
Amblyomma sp. N, L
Haemaphysalis juxtakochi Cooley L
Ixodes venezuelensis Kohls N
Ixodes sp. L

Order CARNIVORA

Family Canidae
Cerdocyon thous
Amblyomma auricularium (Conil) ♂
Amblyomma cajennense (Fabricius) ♂
Amblyomma maculatum ♀
Amblyomma ovale Koch ♂, ♀
Amblyomma tigrinum Koch ♂, ♀, N
Amblyomma sp. N, L
Anocentor nitens (Neumann) ♀, N
Boophilus microplus (Canestrini) ♂, N

Family Felidae
Felis onca
Amblyomma ovale Koch ♂, ♀
Felis pardalis
Amblyomma sp. N, L
Ixodes lasallei Mendez Arocha and Ortiz ♀
Felis yagouroundi
Amblyomma sp. N, L

Family Mustelidae
Conepatus semistriatus
Ornithodoros puertoricensis Fox L
Amblyomma auricularium (Conil) ♂
Amblyomma ovale Koch ♀
Eira barbara
Amblyomma ovale Koch ♂, ♀, N
Amblyomma sp. N, L
Galictis vittatus
Amblyomma auricularium (Conil) ♂
Amblyomma sp. N, L

Family Procyonidae
Bassaricyon gabbi
Amblyomma sp. L
Nasua nasua
Amblyomma sp. L
Ixodes sp. L
Procyon cancrivora
Amblyomma cajennense (Fabricius) ♂, ♀
Amblyomma ovale Koch ♂, ♀
Amblyomma parvum Aragão ♂, ♀

Order PERISSODACTYLA

Family Tapiridae
Tapirus terrestris
Ornithodoros tuttlei Jones and Clifford L
Amblyomma cajennense (Fabricius) ♂, ♀
Amblyomma coelebs Neumann ♂, ♀
Amblyomma incisum Neumann ♂, ♀
Amblyomma oblongoguttatum Koch ♂, ♀
Amblyomma ovale Koch ♂, ♀
Amblyomma scalpturatum Neumann ♂, ♀
Amblyomma sp. ♂, N, L
Haemaphysalis juxtakochi Cooley ♂, ♀

Family Equidae
Equus caballus
Amblyomma maculatum Koch ♂, ♀
Anocentor nitens (Neumann) ♂, ♀, N, L
Boophilus microplus (Canestrini) ♀

Order ARTIODACTYLA

Family Cervidae
Odocoileus virginianus
Amblyomma sp. N, L
Boophilus microplus (Canestrini) ♂, ♀, N
Mazama americana
Amblyomma sp. ♀, N, L
Haemaphysalis juxtakochi Cooley ♂, ♀, N, L
Mazama gouazoubira
Amblyomma sp. N, L
Boophilus microplus (Canestrini) ♂, N
Haemaphysalis juxtakochi Cooley ♀, N
Mazama sp.
Amblyomma sp. N
Boophilus microplus (Canestrini) ♂, ♀, N

Family Tayassuidae
Tayassu pecari
Amblyomma cajennense (Fabricius) ♂, ♀
Amblyomma naponense (Packard) ♂, ♀
Amblyomma oblongoguttatum Koch ♂, ♀
Amblyomma sp. N, L
Tayassu tajacu
Amblyomma cajennense (Fabricius) ♂, ♀, N, L
Amblyomma naponense (Packard) ♂, ♀, N
Amblyomma oblongoguttatum Koch ♂
Amblyomma sp. N, L
Boophilus microplus (Canestrini) ♀
Haemaphysalis juxtakochi Cooley N, L

Miscellaneous
on "field sheet"
Amblyomma cajennense (Fabricius) ♂, ♀

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